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THE LETTERS OF ALFRED KRUPP

THE LETTERS OF ALFRED KRUPP

1826 — 1887

Edited by
WILHELM BERDROW
at the request of the Family and Firm of
KRUPP

Translated by E. W. DICKES

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TRANSLATOR'S NOTE

From the time of the first advertisement of their mark (three circles conjoined) in the *Trade Marks Journal* (No. 6, 7th June, 1876), the firm of Fried. Krupp described themselves in this country as "Cast Steel Manufacturers." In this book, however, the corresponding German title, *Gussstahlfabrik*, has been translated throughout as "Crucible-steel Works," and *Gussstahl* as "crucible steel" (*Tiegelstahl* or *Tiegelgussstahl*), as that is clearly what Krupp was making.

The applicant on behalf of the firm for registration of their trade mark in this country was Alfred Longsdon, several of Krupp's letters to whom are reproduced in this volume ; they are given as written, in Krupp's own quite tolerable English. Acknowledgments are due to Herr F. G. Kraft, of the Historical Section of Messrs. Krupp's works, for enabling these letters to be reproduced and for assistance in regard to various points of difficulty.

1826 to 1848

1826 to 1848

On 8th October, 1826, in the little house[1] built for a foreman at his new steel-works, Friedrich Krupp's life closed. The family had spent the last few years here, in almost needy circumstances; work scarce, profits non-existent, debts piling up, and their name struck out of the industrial taxation-list. The "hammer ground" at the "Fulling Mill," with its comfortable dwelling-house, was leased to an old acquaintance, the hammer usually at rest; the big melting-house facing the town had been idle for six months or more. In pursuit of the chimæra of his ambitions, Friedrich Krupp had lost everything,—fortune, health, and finally courage; an unadorned grave closed the overwhelming disillusionment of his life. Apart from the walls of the silent factory, there was only one thing which he had left to his 14-year-old eldest son, and that was a belief in the future of steel and a determination to work in the service of that belief.

Essen, 15.10.1826.

KRUPP *to* DIRECTOR-GENERAL GOEDEKING,
of the BERLIN MINT.

After a two-years' illness, almost all spent in bed, my father, Friedrich Krupp, the steel manufacturer, passed away, to our great sorrow, last Sunday, 8th inst. I feel it a duty to inform you of this sad event which has befallen our house, especially as the deceased was so fortunate as to be able to call you his friend. In addition, I take the liberty of acquainting you that the business, which has much improved since the departure of the last manager, Grevel, a year ago, since when I have had during my father's illness to attend to everything by myself, will not suffer by this change, as my mother, who has instructed me to present her most obedient regards to you, will continue it with my help. The satisfaction of merchants, mints, &c., with the crucible steel which I have turned out during the past year has gone on increasing, so that we often cannot produce as much as we receive orders for ; if, therefore, you were prepared to give us the kind favour of an order for crucible steel, you could be assured of prompt service. On the advice of many friends the former style of the firm will also remain the present one.

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[1] Later known as the Stammhaus. See page 277 (letter of 14th January, 1872).—Translator.

Stahlhammer, 24.11.1826.

Chief-Forester Griesenbeck *to*
Frau Krupp, *née* Wilhelmi.

You, honoured madam, know on what friendly terms you and the late Herr Krupp leased me these premises, when it was at the same time stipulated and decided :

> that I should function as general agent in all litigation, and that my humble services would be called upon in impending cases.

Now it might easily be considered that the amount payable by me under the lease was liquidated by a counterclaim, and you could still, as before, derive great advantage from me, since you could do without any other man of business.

You know with what interest and zeal, and to your satisfaction, I have dealt with the matters entrusted to me, and have sought your advantage.

If now you will be so good as to consider that I was acquainted with Herr Krupp from the time when he was in employment at Camen, and afterwards often had friendly meetings with him, you will please imagine :

> what a painful impression must have been made on me by the communication of 13th inst. from that young gentleman your son,—in conjunction with the previous provocations.—

Hardly are his father's remains laid to rest,—when the 14-year-old son sets himself to domineer over one of his oldest friends ! !—

For the dissatisfaction which apparently you now feel I have given not the least occasion, and am both wishful and ready to do everything possible to restore the previous good understanding, if you will only tell me openly and straightforwardly :

> how you wish me to order my conduct towards yourself and the young gentlemen, your sons.

. . . .

The notice of termination of the lease and the demand that I shall quit these premises in January may be taken as youthful precipitancy on the young gentleman's part, as he has made no distinction between a servant and a tenant, or between a vagabond and a respectable citizen of standing. . . .

I shall stay out the term of my lease and take steps to pay the rent,—but I have no intention of allowing myself to be humbugged or treated as a person of no account. . . .

Berlin, 24.2.1827.

KLEINSTÜBER, MECHANICIAN OF THE MINT, *to* ALFRED KRUPP.

I am in receipt of your esteemed letter of 4th inst., and am glad to learn that we can once more get steel from you. We found ourselves obliged, at the time when your father had stopped melting, to turn to H. Marshall of Sheffield for crucible steel ; we receive a good kind of steel from him, and I will just mention that it has never happened that the head of the casting has been drawn out as well and has remained on the bar, which was the case with your delivery and caused us considerable losses ; the Marshall steel has also the good property that when the dies made from it are worn out we can still make tools from them, for keeping the dies in order. We have at present a stock of some 50 cwt., but as soon as we need crucible steel again, we will order from you ; this year we should last out with our stock, but not longer. We shall count on your making sure of bringing your steel to the utmost perfection in manufacture, so that we may take all our requirements from you and no longer have to use this foreign Marshall ; for that matter, we have had steel from your works in the past which was quite as good as the best Marshall steel.

Essen, 9.1.1828.

KRUPP *to* NOELLE, MASTER OF THE
MINT, DÜSSELDORF.

That the crucible steel last sent to you has again turned out badly is as unpleasant to me as it is surprising, since it was good in hardness and tenacity, and of the same quality as the piece sent to you for test, whereupon you asked for the present 337 lbs. of the same quality to be sent to you. I have recently had made for the Carlsruhe Mint over a hundred dies, which were ordered from me after I had sent a couple of dozen in this kind of steel for test ; I have also sent elsewhere a great deal of this steel, and it has everywhere been recognized to be good, which convinces me that yours too can be used if rightly treated for hardness, &c. I beg you therefore to make another test with it, and to harden the steel only dark-red, after which the die will be strong enough and usable as regards hardness. And then do me the kindness to give me an exact opinion on the behaviour of the steel when worked, because I should much like to know in what respect this steel fails. . . .

I will send off at the first opportunity the 2 pairs of rolls ordered. I want to include with them 2 dozen Mint dies, which Herr Nübell, of Schwerin, will take with him on his arrival this month. And be so good as not to give any unfavourable report on my steel. I have now obtained a new iron, of which my deceased father also previously used a good deal, and I hope to regain your entire satisfaction with the crucible steel made from it.

Essen, 14.1.1828.

KRUPP *to* J. C. & P. BRÜNINGHAUS,
BRÜNINGHAUSEN.

While I am fully confident that you yourselves are anxious to help me by making it in every way to my advantage to obtain my iron from you, I must request that you will kindly see that the quality is always uniformly good, and will accordingly use all possible care to remove all foreign matter and impurities standing in the way of tenacity, which are highly prejudicial to the manufacture of crucible steel.

If you will have the goodness to have the iron specially made for me, and, even if more expensive, to supply it, so far as possible, still better (more malleable and purer), I should be exceedingly obliged, and I should be very ready to pay you a correspondingly higher price for it, because on it depends to an extraordinary degree the good quality of the crucible steel produced therefrom. . . .

Essen, 7.5.1828.

KRUPP *to* BURGOMASTER STOCK,
LIPPERHAIDE-BAUM.

With reference to the earlier communication which I ventured to send to you, I must most urgently beg you to be so kind as to inform me by return, whether and when the clearing of the brook situated below my hammer-shop will take place ? Owing to the past wet winter, what my own people had previously dug out has to a considerable extent fallen in again, so that not only is the power of the hammer now reduced, through the water below pressing against the hammer-wheel, but half the time is taken up with waiting for the water to run off. Double the amount of work could be done but for this hindrance, and as the loss on this account is much too serious for me to be able to remain indifferent to it, and will keep on increasing if other steps are not soon taken, I must ask you once more to arrange for the earliest possible attention to it, and to honour me with a reply by return.

Essen, 14.11.1828.

KRUPP *to* BURGOMASTER STOCK, BORBECK.

As I hope that your Worship will now have consulted with Chief-Forester Enners of Kettwig on the method of clearing my hammer-brook, and as, in view of your promise, I may fairly expect the clearing now to be carried out, I beg that you will, at the earliest opportunity, kindly inform me what has been decided. Your Worship will, I trust, not wait for this year too to pass—as is beginning to look likely—without the removal *this* year of the grievance which I have had for over 1½ years in the great loss which I am suffering by having to pay other forges to work for me ; if, however, this should have been decided, so that I can make no use of my hammer-shop just at the time when there is plenty of water and it can serve me properly, I beg respectfully that you will kindly apprise me thereof by return, so that I may make timely application elsewhere, in order to get satisfaction at last. . . .

Essen, 6.2.1829.

KRUPP *to* BURGOMASTER KOPSTADT,
ESSEN.

In continuation of my respectful communication of 22nd Dec. last, which contained the desired particulars of the present position of my Works, I have the honour to submit the following for the favour of your attention.

Last year's sale of crucible steel was, as you will have convinced yourself, no larger than that of the year 1827 ; the cause of the lack of increase, in face of the large consumption in the Prussian State, is the absence of sufficient public knowledge as to my Works and the excellence of my product, and especially the still prevailing prejudice which ascribes such great superiority to the English article ; although I have the testimony of those Mints and factories which deal with me that I supply a product in many respects preferable to the English crucible steel.

Since the Prussian State is concerned to further the growth of home manufactures, I venture to request that the State may co-operate in establishing the success of this solitary Prussian crucible-steel factory, which is so useful to the State. I therefore make free most respectfully to request you to lay my plea before the proper Authority, and to be so kind as to point out that if my Works are made known and recommended to the public, and if the Royal Workshops are instructed to place orders with me, my output will soon shew an important increase, and, instead of the English steel which is imported in such large parcels, mine will gradually oust the former and find a widespread sale.

Essen, 27.1.1830.

KRUPP *to* GEORG MOLDENHAUER,
DARMSTADT.

. . . I have recently succeeded in the important invention of producing a completely weldable crucible steel, which like any other steel can be united with iron in the ordinary way at welding heat, and the experiments with it for facing the heaviest sledge-hammers as well as for small cutting-tools have been a thorough success, the joiners' chisels made from it having extraordinary cutting power and the hammers such a high degree of hardness. . . .

For three years Alfred Krupp had struggled to keep the works going. He had succeeded in maintaining their existence and in making himself known here and there, but nothing more. With a few hundred pounds' worth of business in tiny amounts, with six workmen, making Mint dies, fleshing-knives, and a little tool-steel, he was fighting against an overwhelming English competition. A " large " order from Düsseldorf for the Mint (300 lbs.), the visit of the Master of a South German Mint, a little invention in the treatment of steel, these were the big events of the careworn existence which he spent, by day at the melting-furnace and the hammer, in the evening at the writing-desk. He was able to keep his head above water in this pitiful fashion, but not to develop. He built a small workshop for turning and polishing steel rolls, but his brook denied him the water for power. He wanted to construct a heavier hammer driven by steam, but neither money nor credit was to be had in that poor and backward age. He applied to the King of Prussia for a State loan on easy terms for the extension of his Works. But the Minister decided against him and the influential Beuth, too, who had so often helped industrialists in Berlin and Silesia, spoke no word for Krupp. He was assured, even officially, that his steel was good, in fact " in many respects preferable to the English," but there the matter ended ; the cheap English tool-steel continued to dominate the market in the Prussian States.

Alfred Krupp admitted neither defeat nor discouragement, but he changed his policy. He relegated the tool-steel and semi-manufactures in general to the second place, and concentrated on a single product, which he brought in a few years to a perfection not reached elsewhere : small steel rolls for specially exacting requirements, whether as regards hardness or purity. On this principle, with infinite toil, he developed his undertaking beyond its first beginnings.

Essen, 31.3.1830.

Petition *of the* Widow Krupp *to* King Friedrich Wilhelm III *for assistance.*

May it please your Majesty graciously to listen to the most humble petition of a widow, who is not in a position without the paternal help and support of your Majesty any longer to maintain the crucible-steel Works which were founded by her deceased husband amid many adverse circumstances, and on the continuance of which her existence and that of her 4 children depends.

This factory, which after the death of my husband three years ago has been kept uninterruptedly working under my superintendence and with the help of my son, as shewn by the enclosed certificate of the local Authority, promises, if it continues and flourishes, no inconsiderable advantages to the national industries ; since it produces crucible steel, an indispensable article of manufacture, which formerly could be obtained only from England, and to the preparation of which in this country great importance has always been attached, so that in fact His Majesty the King of Bavaria recently offered a prize of 3,000 florins for its manufacture.

On the origin of my steel Works, their present position, and their utility to the State if they should come into a flourishing condition, I humbly submit to your Majesty a document, which, in a statement based upon the truth, contains the true requirements of the Works and the recital of the means by which, to the advantage of the State and of this town, they might be brought into a flourishing condition.

With full confidence in your Majesty's benevolent and paternal care for your country, I venture most humbly to petition your All Highest self :—

In consideration of the fact that my own and my husband's fortune has been expended on the establishment of the Works and that I am therefore not in a position to obtain what is still wanting for their complete equipment and working, but that a continued lack of the means thereto would ruin the factory, and in consideration of the fact that no unimportant advantages would accrue to the State itself, were my factory in a flourishing condition, and that its success can thus be looked upon as a matter of national importance,—in consideration of all this I venture to lay before your Majesty the most humble petition that you will be most graciously and paternally pleased to aid my factory by the most gracious grant from the Treasury of an interest-free advance of 15,000 thalers,[1] for 12 years. . . .

Essen, 26.4.1830.

KRUPP *to* NOELLE, MASTER OF THE
MINT, DÜSSELDORF.

For some time I have been paying special attention to experimental work in the direction of producing steel rolls in a finished state ; the results have been most satisfactory, so that I am able to manufacture the rolls hard with entirely unhardened spindles and also consisting of rings, with iron core and spindles ; they are turned in a little machine which ensures trueness, and afterwards ground and polished in a polishing-shop which I have arranged for the purpose. I think I can safely recommend these for your use, since I believe I am in a position to satisfy the primary requirements of a high degree of hardness, strength of spindles, and trueness. I should be glad if, instead of the rolls forged from crucible steel, you would take the completed ones from me, which I should supply in every case on approval ; at the same time I beg you to be good enough to indicate what you can give for rolls of this type, free from defect. It would be gratifying to me to satisfy you thoroughly in this matter, and it would not vex me if you should actually send back a faulty specimen ; for I very well know how much depends on producing rolls that are quite *faultless*. I have kept silence of set purpose until I was able to announce this to you.

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[1] £2,250.

Essen, 19.12.1830.

KRUPP *to* NOELLE, MASTER OF THE
MINT, DÜSSELDORF.

. . . It is very pleasing to me to hear that you are commissioned by the Royal Mint in Berlin to arrange for the considerable quantity of crucible steel which you mention, and I am very grateful to you for the kind trouble which you have taken in my interest.

Unfortunately your assumption is correct ; since the delivery mentioned I have received no further orders for Berlin, although I applied to Director-General Goedeking not long ago. The steel then sent to Berlin had to be forged by another firm's hammer, and was liable to be damaged through incorrect treatment by workmen inexpert in handling it, who completed the forging of the whole consignment in one day.

The organization of the Works is such that we can melt 3 times a week, 350 lbs. being made each time. You can see from this that the new requirement for the Berlin Mint can soon be produced. If frost does not prevent, only 4—6 weeks will be needed.

It is not unknown to you what sacrifices my deceased father made, and how we still feel them. Although our circumstances are on that account not of the best, yet that fact does not involve any particular impediment to the execution of orders of this kind. . . .

Essen, 9.7.1831.

KRUPP *to the* MANAGEMENT *of the* MINT,
GOTHA.

A number of causes have prevented me from keeping my promise to deliver in a specified time the rolls which you kindly ordered from me last year.

A good part of the time which has elapsed has been taken up with the alteration of lathes and provision of new ones, and with the transfer to the Works here of the roller-polishing shop which was previously at my hammer-shop by the water; a further delay was caused by a necessary journey and an illness following it. Moreover, the superintendence of my Works, which are fortunately progressing, took up so much time that I had to drop the work on rolls for a while.

For some weeks, however, I have had the work going busily again, but once more refrained from giving the due advice of impending despatch, in order not to have the unpleasantness of being again unable to keep my word through some fresh delaying cause which might arise at any time.

I am to-day posting the pair of crucible-steel rolls kindly ordered; after receipt and approval, please credit me with 100 thalers[1] Prussian currency. . . .

Essen, 5.11.1831.

KRUPP *to* DIRECTOR-GENERAL GOEDEKING,
BERLIN MINT.

I have the honour most respectfully to reply to your esteemed letter of 21st ulto., and especially, with reference to the copy, communicated to me, of the intimation from the Office of the Principal Royal Mint, dated at Berlin

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[1] £15.

17th Oct. 1831, to offer, as in duty bound, compensation for the loss caused by the consignment of 2nd July, which unfortunately turned out faulty.

When Herr Weitenauer was here, this steel, which, contrary to the presumption at that time, has been found faulty, was already prepared for despatch ;—following his instructions, however, I tried later to produce steel of a quality corresponding to the requirements, which will, I hope, have been confirmed by the latest consignment of dies.—

Seeing that I have since begun the production of fresh supplies of the best die-steel, I beg that the requirements of the Principal Royal Mint may not be ordered in England, but that the highly-esteemed commissions may be bestowed upon me, so that I may retain sufficient work, which is the essential condition of the prosperity of the Works.—

The anticipation of good quality steel will certainly be confirmed in future use, and I shall be more in a position to bring my product to a high pitch of perfection and to a constant uniformity of composition, if the assistance, already solicited, for the installation of a heavy hammer, combined with a light rolling-mill, may be graciously conceded to me. By the use of the former the crucible steel gains in *density* and *fineness* ; the rolling-mill is principally required for the production of the thinner kinds of steel, to enable them to be supplied to the market the same as they are obtained from England.

The necessary experience, which I have gathered in continuous management of the Works, the exact knowledge of the production of crucible steel, the certainty that if I were in possession of the necessary money I should be in a position to obtain the best materials from the surest sources, in a constant uniformity of composition—that, further, with the possession (so essential to the completion of the Works) of a heavy hammer of my own, the product, which can then always be melted and forged from the same materials, by the same workmen, in accordance with definite rules, *will also always be of the same composition and will gain in fineness*—and can be made much cheaper than now, when outside firms have to be utilized at great expense ;—lastly, the continuance of the Works hitherto, in spite of the lack of the requisite means ;—all this would presage with certainty a flourishing condition for the Works, if the petition were graciously conceded.

I have ventured most respectfully to make the foregoing statement in reply to your kind question : "By what support can your product be brought to a higher pitch of perfection and to a constant uniformity of composition ?" . . .

Essen, 29.1.1833.

KRUPP *to the* HEAD TAX OFFICE,
DUISBURG.

Three crucible-steel rolls of my own manufacture have been sent to me by the Management of the Baden Grand Ducal Mint at Carlsruhe for alteration, and I have applied to the Provincial Chief Customs and Tax Directorate at Cologne for permission for duty-free importation ; in consequence of which, particulars have been taken at my residence by the Chief Tax Controller, Herr Mittsdörfer from Mülheim-on-Ruhr, and I am now instructed by the abovementioned Directorate to forward these rolls to the esteemed Head Tax Office ; whereupon I have requested the forwarding agent at Cologne, in whose warehouse they were lying, to send them to Herr C. W. Schoeler at Duisburg.

My present desire is to learn what further steps I must take to attain my object, and I therefore beg to request the favour of an early reply, since these rolls, in order to obtain their duty-free importation, have already been about *three months* on the way, and, through the delay in receipt, loss accrues to the said Mint and unpleasantness to me.

In my business it may well happen that my own products are sent to me from abroad for alteration or repair, and I should much like to know whether and in what way such lengthy and complicated procedure can be obviated, so that I can more quickly gain possession of such articles ; I venture, therefore, to ask respectfully for the kind advice of the esteemed Head Tax Office : how should I proceed in future in cases of this sort ?

Essen, 1.9.1833.

KRUPP *to the* MANAGEMENT *of the* BADEN GRAND DUCAL MINT, CARLSRUHE.

It is a long time since I have been honoured with orders for forged Mint-dies, which leads me to the supposition that the esteemed Management of the Mint may have been induced to make a change in the method of obtaining them.—Should this really be the case, and should the cause perhaps be some fault which has shewn itself in my deliveries, the object of this letter is most respectfully to ask you to be so good as to notify me what improvement my product must shew, in order to be found worthy of being continuously supplied for the requirements of the esteemed Management of the Baden Grand Ducal Mint. The progress which has meanwhile been made in manufacture permits me to count on being able fully to meet every demand which can be made upon a good crucible steel. I therefore earnestly beg for your esteemed consideration of my humble request, since it would be extremely painful to me if the previous valued connexion were not continued.

Lastly, I would add that, in consequence of the considerable extension which has recently been made in my roller factory, and of the great saving of cost in production, since everything is now driven by water-power, the rollers, too,—which are supplied in all sizes, for every requirement, up to 800 lbs. *and with the frameworks*, i.e. of the type of which I have already supplied 3,—can now be supplied at 100 thalers the pair, instead of 120 thalers. This for the favour of attention in case of a fresh requirement.

Smaller rollers are considerably cheaper still, according to dimensions.

Essen, 22.12.1833.

KRUPP *to* PET. BRUCKMANN & CO.,
HEILBRONN.

3 weeks ago, as I was on the point of having your castings forged, the water here rose to such an extent, following extraordinarily heavy rain, that all Works situated by the water have been put entirely out of action, and I am unfortunately thus prevented from effecting despatch of your requirements within the promised time.

The foundation of the German Customs Union made the year 1834 a turning-point in Krupp's life. He had already extended his business trips experimentally into the "Highlands," to Darmstadt and Carlsruhe, and found a good market for his wares; the miserable Customs arrangements, however, had limited the results. Now these barriers fell. A long journey through the South German States as far as Munich brought him into all the centres of the German gold and silver industry, and he returned with a sheaf of orders unexampled by his standards. Illness, drought, and frost, lack of money and every conceivable hindrance obstructed his path; he overcame one after the other, converted to steam power in the face of a thousand cares and difficulties, and reached out with his canvassing for customers over the German frontiers to Austria, France, Switzerland, Russia, and the Levant. Matters were not made easy for him; renewed appeals to the State for help remained without effect; still, he found friends. His cousin von Müller lent him the money for the extension of the Works, his younger brother Hermann joined him in the management, a couple of decent commercial men were engaged as travellers. Slowly his range of business grew and with it his staff of workmen, whom Alfred Krupp himself got together from the countryside around Essen, and whom he trained.

Essen, 17.3.1834.

KRUPP *to* J. C. & P. BRÜNINGHAUS,
BRÜNINGHAUSEN.

. . . Could you send me here in six weeks' time 3,000 lbs. of Osemund [iron] ? After receipt of it . . . I shall require a substantial quantity from you, as I have reason to expect important orders from various countries where as long as 2 years ago I broke the ground for sales.

I must repeat, however, what I have said before as to the necessity for the best quality of iron, as it entirely depends on that whether I continue to satisfy the buyers, and secure a regular market. The last lot might have been thinner, as well as better. As regards the new consignment I therefore again urge on you the greatest possible care.

Essen, 9.6.1834.

KRUPP *to* ZOLLMANN, MASTER OF THE
MINT, WIESBADEN.

I returned yesterday from my journey, and take this opportunity to ask a favour of you. I have supplied to the order of Herr F. Grautegein a rolling-machine with a central screw, and it turns out that the rollers press more on one side than on the other, causing the plates to come through awry. To make sure that the necessary adjustment is carried out properly and by an expert, and that no harm is done to the machine, I wanted to ask you to be so kind as to send a skilled mechanician or workman from your Establishment at some convenient time to inspect the machine and to see to the adjustment, in return for a suitable fee. I should be most grateful to you for the kindness. In conclusion, I hope that you will not take this importunity amiss.

Essen, 1.8.1834.

KRUPP *to* DIRECTOR SUERMONT,
UTRECHT MINT.

. . . The water, which has to be used for such different purposes, has swollen from storms, and I have therefore, since you, Sir, inform me that you are now so extremely busy, given orders for the immediate manufacture of the required hundredweight of 1¼ inch steel, which will thus leave on 4th or 5th inst., again via Ruhrort. Then, on 6th inst., in order that you may have no cause for complaint of lack of dies, I will despatch another parcel of the larger dies, as well as some smaller ones which are in hand. . . .

Essen, 6.9.1834.

KRUPP *to* J. C. & P. BRÜNINGHAUS,
BRÜNINGHAUSEN.

I have received your consignment of Osemund and put it under manufacture, but unfortunately, apart from the unsuitable size of the bars, I have found this consignment so imperfect in quality, that I have had to put aside some 600 lbs. as useless for the production of good crucible steel. I have, on the whole, always been fairly satisfied with the iron received from you, and I do not understand the reason for this occurrence—as annoying as it is prejudicial—all the more since I have your assurance that you always want to supply me with a high quality of iron, the imperative need for which I have so often repeated to you. I must now urgently request the utmost expedition with a consignment of about 3,000 lbs. of Osemund, so that I shall not suffer serious injury from a considerable delay in manufacture. You will, I trust, do what is necessary to ensure that, if you have not this quantity in stock, work may be put in hand for promptest despatch.

My future requirements, especially if nothing occurs to hinder the intended installation of a steam-engine next spring, will not be like the past ones ; I shall then be glad to obtain them exclusively from you. You will, however, doubtless realize how necessary it is that I shall then be able to continue to rely on constant uniformity and good quality of the material, since not only the iron but all the expenses involved in manipulating it are lost, if it has not its reputed properties.

Essen, 1.10.1834.

Krupp *to* Nicolao Lendy, Engraver to the Royal Sardinian Mint, Turin.

. . . We have had such dry weather here throughout the summer that the activity of the Works was for a long time suspended ; the hammer-shop, in which the crucible steel is forged, could not work for lack of water. That is why there is at the moment no crucible steel in stock, and even orders long outstanding from various German Mints still remain unexecuted. However, the autumn has now arrived, and with it we may expect a beneficial change of weather, so that I shall soon be able to fill your orders. Before this, however, I beg to make some necessary remarks.

All the German Mints, which obtain their requirements of crucible steel from me, order the dies ready forged to sketch. Arrangements have therefore been made here for this to be done with the requisite care, exactly to the sketches furnished, which gives these Mints the advantage that, since each die is cut out separately, none is faulty and incompact, also that the dies are made exactly alike in shape and weight and are improved in quality by the method of manufacture. It is especially requisite with the heavier kinds that they should be manufactured here, since it is very easy for dies of the best steel to be rendered useless by incorrect treatment in forging. . . .

Finally, I take this opportunity of announcing that I also manufacture breaking-down and finishing rolls, of the finest crucible steel, for most of the German Mints and for factories of all sorts, this being one of the main branches of production here. . . .

Essen, 16.11.1834.

KRUPP *to* TRENELLE, SAARN.[1]

With these presents I venture the respectful enquiry whether you would be inclined to allow a parcel of crucible steel of 5 to 8,000 lbs. to be forged for me at your Works at Dahlhausen in the course of 2 to 3 months. My hammer-shop has been in great difficulties this summer owing to lack of water, so that, in spite of help which I have had on the part of Messrs. Jacobi, Haniel and Huyssen, I have been unable to produce anything approaching my requirements. Your tilt-hammers would, as I convinced myself not long since at your Works, be excellently suited to extending crucible steel, as they are of the same weight as mine. With heating red in charcoal, I pay Messrs. Jacobi, Haniel & Huyssen, whose very heavy hammer I can only use for the larger sizes, 1⅙ thaler per 100 lbs. . . .

Essen, 2.12.1834.

KRUPP *to* DIRECTOR-GENERAL
GOEDEKING, BERLIN MINT.

The interest which your Honour has hitherto expressed in the welfare of my Works induces me to make the present respectful communication.—The successful result of my travelling this year has made it necessary to work continuously at the extension of the Works, so that I already employ 45 men, and, to satisfy imperative requirements, the scheme for the completion of the Works, which has long since existed on paper, must at last be carried out. This scheme includes a hammer-shop with three hammers, a turners' shop, a grinding-shop, stamping-mill, and bellows, the whole being driven by a steam-engine of 18 to 20 horse-power. This plant will, I hope, be ready in May of next year. —I shall hereby be placed in a position to produce an enormous quantity, for the sale of which the customers gained up to the present will hardly suffice ; in the first place, therefore, now that I have begun to supply the requirements of the Dutch and Sardinian Mints, I have chiefly in view the Mints in Vienna and Petersburg. May I take the liberty of soliciting your Honour's advice, whether the best course will be to address myself to these Establishments direct or through the good offices of the Prussian Embassies? I also venture respectfully to request your Honour to be so kind as to furnish me with a testimonial in regard to my products in the form of crucible steel, dies, and rolls, and thus to put me in the position of not having to omit a reference to my supplies to you, which would be my principal recommendation. I have no doubt of then securing a favourable reception in both places, and in conclusion earnestly beg your Honour not to take amiss the presumption implied by this expression of my wishes.

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[1] Trenelle, formerly a small-arms manufacturer in Liège, had been since about 1815 the head of the Royal Prussian Arms Factory at Saarn-on-Ruhr and had been a friend of Krupp's father.

Essen, 21.12.1834.

KRUPP *to* JACOBI, HANIEL & HUYSSEN,
GUTEHOFFNUNGSHÜTTE.[1]

In reply to your favour of 19th inst., the plan of procuring the steam-engine for driving the shops in question for the production of crucible steel, and its manufacture into finished goods, has long been a settled matter ; before agreement on the actual order, however, the power and design of the engine have to be definitely settled, and an acceptable price quoted by you.—I will not consider other substantially cheaper offers if you will not only help me quickly with the delivery of the required engine (which in Works equipped like yours depends only on yourselves), but will also bear in mind that the order for the engine and the accessories connected with it, in accordance with the plan on which my Works are to be extended, will be for me the first step towards important future business, and I therefore deserve as favourable treatment as others. . . . In view of the nearness and cheapness of coal, I am not inclined to instal an engine with expansion, at such a great difference

[1] Steelworks at Oberhausen.—Translator.

in price.—Your kind reply will, I hope, provide the opportunity for a complete and early agreement, so that immediate orders may be placed for the necessary castings for the installation, such as driving-gear, hammer-tools, flywheel, &c. On the conclusion of the contract I shall not fail to give you an acceptable security. The buildings are shortly to be up, including necessary woodwork, so as to have everything ready by April for the erection of the engine, for which arrangements have already been made.

Essen, 23.12.1834.

KRUPP *to* BURGOMASTER PFEIFFER,
ESSEN.

In the matter of my crucible-steel Works, I beg respectfully to solicit from you an official testimonial, and to ask that you will kindly treat the matter as confidential.

The history of my Works—the trouble and sacrifice it has cost to bring them in a space of 24 years into their present position—is partly known to you. Until 4 years ago they were always operated at a loss ; since that time, however, they have gradually experienced a change, which for the past year has been so favourable that the earlier expectations, which inspired courage to work on in spite of all sacrifices, have almost been surpassed. . . .

I intend therefore to petition the State for an advance ; my petition in 1830 was not summarily refused by His Majesty the King, to whom I had applied, but I was denied an advance on account of the exhausted condition of the Treasury. My claim to this advance, free of interest, is based partly on the fact that my father, who established the Works, lost 10,000 thalers[1] through the fault of the State, which had given an impostor the patent for crucible-steel manufacture. My father, who had already sacrificed a great part of his fortune in the belief that this patent was based upon proven information, went into partnership with this man, Nicolai, in order to avoid the loss of what he had laid out, and lost

[1] £1,500.

this 10,000 thalers on Nicolai's work, in which the latter's ignorance was demonstrated. My claim is also based on the further fact that it is in the interest of the State itself that my Works should succeed, seeing that home products are worked up in them into a manufactured material which has hitherto been obtained from England at a loss of large sums of money. . . .

The men whom I need for the Works I choose by preference from my native town and its surroundings. I already employ 45 at this moment, and their number, if the desired assistance is given me by the State, may soon grow to some hundreds ; I shall never slacken this effort to give a livelihood to the working class, which too often suffers want.

In now respectfully requesting you to furnish me with a statement of the advisability of extending support to my Works, for the reasons known to you, I cannot expect you to do this out of consideration for my interests ; but the good of the town, which you have hitherto been at such pains to further, is so intimately bound up therewith that I may count on this assistance.

As a guarantee of the truth of what I have said, I beg to enclose a similar certificate from the late Burgomaster Kopstadt, which I should like returned.

I intend applying to His Excellency von Bodelschwingh, Ober-Präsident [Lord-Lieutenant] at Coblenz. . . .

Essen, 23.1.1835.

KRUPP *to* J. RAVENÉ'S SONS, BERLIN.

The working of my hammer-shop was interrupted in the course of last summer by drought, and it has not been possible until to-day for me to fill the orders received in your neighbourhood during my last year's trip, amongst which is your trial lot (bars of crucible steel). . . .

Being convinced of the good quality of this steel, I believe that I may expect this to mark the commencement of a mutually advantageous business connexion, and consider it desirable to call your attention to the fact that in working up this steel, as also in hardening it, only a dark glowing heat is requisite, and that with a dark glow it becomes just as hard as the English steel with a much greater degree of heat ; as soon, however, as this crucible steel is heated too much, it loses in quality. Towards the middle of the coming summer I shall start running a complete hammer-shop, as well as a machine-shop, driven by a steam-engine, and so shall be capable of executing every order not only well, but also quickly.—

Essen, 4.2.1835.

KRUPP *to* A. TH. SÖLLING, ESSEN.

. . . Will you be so kind as to give me the address of a business house in Trieste with which you have relations, so that, mentioning your name, I may find out in what way and with what houses in Trieste I can establish connexions, in order as far as possible to find a market there too for my wares, and to be able to work for other regions as well through merchants there.

Essen, 8.3.1835.

KRUPP *to* J. U. BERGER & SON,
SCHWABACH.

In reply to your favour of 5th inst., I cannot blame you for being dissatisfied with me ; if, however, you knew how many difficulties have come in the way of the execution of your trial order, I could count on your indulgence.—When the rollers[1] were ready for grinding, as stated in my last letter, one was broken by the carelessness of a workman, which brought about this fresh interruption ; now, however, several are ready for grinding, and I shall send you 1 pair of them by post within a fortnight. Two reasons—an illness, and the execution of a project by which my Works, at present divided into two widely separated establishments, are by July next to be carried on in one spot, with the help of a steam-engine, combined with hammer-shop, machine-shop,

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[1] These were the first tinsel-rollers made by Krupp.

&c.,—made it impossible for me to pay the requisite attention to the production of so important an appliance as your rollers, and therefore, I had less work done on them. . . .

Essen, 21.3.1835.

KRUPP *to the* HEAD OFFICE *of the*
MINT, MUNICH.

With these presents I have the honour to report that the parcel of forged dies, for which I have the pleasure to forward enclosed an account made out to the Royal Greek Regency in Athens, has to-day left for Ruhrort for forwarding to Rotterdam. Messrs. A. Th. Sölling & Co. there are charged with the despatch to Athens as well as with the insurance of the goods. I shall be prepared to give an account of the expenses incurred if so requested. An interruption in the manufacture delayed the forwarding of the dies by a month ; the present is, however, the most favourable time for it. The finest steel has been used for the dies, and I have reason to trust that I shall hear a favourable account of them in due course.

Essen, 29.3.1835.

KRUPP *to* P. C. AEUFERMANN,
KÜCKELHAUSEN.

I have just received your letter with the news that we cannot have the heavy oak ; I am glad, however, that you have found another. I hope you will now come here at once by the mail-coach, so that we can talk it all over. 4 hours' distance from here a big oak has also been felled, which we can inspect. Be so good as to come very soon ; in a week the principal building will be up ; we are pushing on with the work ; if only the hammer work is not behindhand, we shall be able to work in June. The steam-engine is almost finished. You will presumably also bring word about the blacksmith, so that a contract can be made ; since you say that he is a good man, it would suit me to come quickly to terms.

Essen, 12.4.1835.

KRUPP *to* NOELLE, MASTER *of the* MINT,
DÜSSELDORF.

I have the honour to transmit, as desired, the calculation on which the higher price of the crucible steel in forged rollers is based, as follows. . . .

. . . I will leave it to you now to judge whether there is good ground for my remark that I can no longer guarantee the rollers. It is a guarantee which, on account of the possible failure of the best specimen on hardening, has so far been conceded to no other customer. Work of this sort, which cannot, like other kinds, be left to the workmen alone, must at least shew a comparable profit, if not more, or at least something certain. . . .

In your esteemed communication, moreover, the disbelief in the reasons I gave indicates a mistrust which I am unable to reconcile with the goodwill shewn at other times. If you will imagine how unpleasant such a proof of misunderstanding would be to yourself, you will realize how disturbing it must be for me, in my efforts to gain the necessary general respect for our firm by reputable methods of business, to be so misunderstood by you that you can suppose that I have been dealing in an arbitrary fashion, at the dictates of unworthy considerations, personal motives, and so on.

Essen, 25.9.1835.

KRUPP *to* JACOBI, HANIEL & HUYSSEN,
GUTEHOFFNUNGSHÜTTE.

I must herewith repeat the complaints which I made to Herr Kesten about faults which have appeared in the engine supplied, and beg to point out that, with a 450 lb. hammer as at present, it is not possible to work for half-an-hour without the steam pressure falling to 20 lbs., in spite of the most vigorous stoking, even if it starts at 40 lbs.

I should be very glad if to-morrow, Saturday, a qualified man could come over here, specially to ascertain during the working of the hammer what is the reason for the trouble mentioned, and I should then like whatever alteration is possible to be made, on Sunday, in order that we may be working properly again on Monday.

Essen, 7.10.1835.

KRUPP *to* JOHANN BALTHASAR
STIEBER & SON, ROTH.

. . . Before you gave the order the price of such rolls had been fixed at 600 florins.—In your neighbourhood, which had not formerly been visited, I had previously no customers for this article, and I contented myself, therefore, with the smaller price for a trial order ; but, if I am to satisfy the great demands which are made on this tool, it is impossible, in face of the high cost of production, for me further to reduce the price, and I can only maintain it as it is in consideration of substantial orders to come. It has been put as low as this for only one house apart from yourselves, and that with the same point of view, and it cannot be offered otherwise than at 480 florins,—in accordance with the present price list. The machines which are requisite for the manufacture of the rolls (I have now again installed new ones) are so extraordinarily expensive, and, after the very considerable costs of manufacture have been incurred, the articles must be so forced on hardening, in order to attain the greatest possible fineness and hardness, that in the process they are as likely to go to pieces as to be a complete success. This risk has to be reckoned for ; I can, it is true, guard more against it, but that would be only at the expense of the durability of the goods, which would be no advantage to you—and no credit to me. . . .

Essen, 11.11.1835.

KRUPP *to* BARON V. BODELSCHWINGH-VELMEDE, OBER-PRÄSIDENT *of the* RHINE PROVINCE, COBLENZ.

(*Rough draft.*)

Your Excellency
will most kindly excuse my presuming, in the matter of the crucible-steel Works which I manage for my mother, to put forward most obediently in writing those matters for which the brief space of your presence here, during the inspection of the Works with which you honoured us, did not allow sufficient time.

In the first place, I beg to remark that the minutes of the suit against Nicolai, enclosed with the humble petition of my mother for an interest-free advance of 10,000 thalers[1] for ten years, were interchanged by the esteemed Royal Government at Düsseldorf, when announcing the unfavourable reply received, with the reports on the condition of the Works obtained from the Royal Mining Councillor Herr Heintzmann of Essen, and from the Master of the Royal Mint, Herr Noelle, of Düsseldorf, and the latter documents instead of the former were sent here. In the contents thereof there lies unmistakably a part of the reason why our request was not granted, and I venture to allude here to Herr Noelle's remark which suggests that the installation of a steam-engine instead of a water-mill for supplying power to the Works is too costly and venturesome an undertaking, and to that of Herr Heintzmann that the state of my health is such as gives rise to fear for my life, so that the Works might be exposed to the danger of not coming up to expectations. Since both of these remarks are based on lack of knowledge or error, permit me to refute them. . . .

As regards the remark of Herr Heintzmann, it is true that at the date of his report I had not entirely recovered from an illness which developed last year ; but this was not so serious that the best physicians, if asked beforehand " whether the extension of the Works might be undertaken without danger on account of my condition," would not have advised me to proceed with it ; that my indisposition was not so dangerous has been shewn by the event. Moreover, my younger brother, who is very active and is acquainted with everything requisite to the management of the Works, had become so proficient that even if the worst had happened their existence would not have been endangered.

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[1] £1,500.

The accident of the interchange having acquainted me with the said reports (which, since they are not my property, I beg to enclose), I have thought it necessary to make the foregoing reply. If this can contribute what is perhaps still needed to shew the conditions in a more favourable light, and if your Excellency finds the belief not unjustified[1] that, even without consideration for the general benefit which will accrue to the town, the neighbourhood, and the State, from the grant of the desired advance of 10,000 thalers for a period of ten years free of interest, it could fairly be claimed in justice, that the actual loss of a similar amount, which my deceased father suffered by reason of nothing else than that Nicolai succeeded in obtaining a patent, which was undeservedly assigned to him by the State, for the production of crucible steel (and to which he could only have sneaked his way by falsifying the proofs), will be, if not fully restored, yet in this manner made good, then I shall have the pleasure of hoping that a kind intercession on the part of your Excellency will have the desired effect.—In the course of this year, 18,000 thalers[2] have been laid out on the extension of the Works ; the profits did not suffice to meet this, but recourse had to be had to our borrowing powers.

The capital which is already in the business, however, is insufficient.

Fifty families are now getting their living from the Works ; an incomparably greater number could, however, earn their bread therefrom, if the firm was not obliged to lift itself out of its depression entirely by its own exertions, without any assistance.

All the other circumstances, the belief in ability to make good, local advantages, the varied nature and the quantity of articles of this class which could hitherto be obtained only from England, and the large field for sales, wherein more than the Continent can be included, unite to justify the confident assurance that after the expiration of 10 years, on the repayment of the capital, the maintenance of several hundred families and the saving of several hundred thousand thalers, including the amounts of present remittances to other countries in respect of manufactured goods which will then be replacing the English, will be shewn yearly as a profit to the State.

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[1] Marginal note by Alfred Krupp : " This in consideration of his statement that he was of that opinion. But leave it to him to recall that, so as not to make it awkward for him in forwarding this letter. Then he can tell the Ministry his opinion himself, without it looking as though I wanted to hold him to his word."

[2] £2,700.

Of all the subventions known to have been paid by the State, probably none could promise a richer harvest. We shall exert ourselves to the utmost to bring the promise to fruition in the measure indicated, and this is the form which our gratitude must take.

May your Excellency graciously pardon the length and freedom of statement indulged in, in this my obedient communication, and permit me to trust that it will not be taken amiss.

With the greatest respect, I have the honour to remain
Your Excellency's most obedient servant,
ALFRIED KRUPP,
Manager of the Crucible-steel Works
of the Firm of Friedrich Krupp.

Written in my name, because he knows me, and I flatter myself that he has a good opinion of me in some ways.

Essen, 16.4.1836.

KRUPP *to* BARON VON VINCKE,
OBER-PRÄSIDENT *of the* PROVINCE *of*
WESTPHALIA, MÜNSTER.

I take the liberty respectfully to lay before your Excellency my humble petition, together with a short statement of the present position of my crucible-steel Works. I may assume that this establishment will be to some extent known to your Excellency, although only in its unimportant condition of former years, and that, knowing with what interest you regard the national industries, it will not be without indulgence that you will read my description of the extraordinary turn in its fortunes.

With the progress in the improvement of crucible steel, the sale has for several years been so increasing that in the past year it became necessary to instal a steam-engine, which is now fully occupied driving 4 hammers, a number of lathes and polishing wheels, and several other contrivances. My products are used not only all over Germany, which my travellers cover, but also farther away, in Holland, Italy, French Switzerland,—everywhere with the greatest satisfaction ; more often than not they are preferred to the similar English productions. In the past year I have sent consignments as far afield as Sardinia, Athens, and Petersburg. 6 years ago I had scarcely 6 workmen, now I have already been obliged to add to the number of my 70 employees, in order to avoid giving dissatisfaction to customers through long delays in delivery. . . .

The capital, however, which is required for the business, now extended beyond past expectation, exceeds my means, all the more since the sums laid out are increased by the length of credit, which I usually have to concede. Capitalists here will only lend out money on property in land, factories are not looked upon as adequate security ; in view of the information which has reached me that your Excellency is applying the capital of the Ruhr Navigation Fund mainly to the assistance of factories, I venture now humbly to petition for a loan of 10,000 thalers at the usual rate of interest, against which I would willingly pledge my new and duly insured establishment. As persons capable of giving a detailed account of the condition of my Works, I may mention the Burgomaster of Essen, Herr Pfeiffer, or the Royal Mining Councillor Herr Heintzmann, the latter of whom, having an intimate knowledge of manufacturing conditions and a knowledge of the conditions of my own Works gained from a complete survey of them, could no doubt give a fairly complete description . . .

If this amount could not be placed at my disposal at once, but only a part, say 3 to 5,000 thalers, could be paid over forthwith, this would for the moment be of real assistance.

In the trust that I may enjoy some share of the special favour which your Excellency bestows upon all branches of industry and their promoters generally, I await your most kind decision, and remain, with especial respect . . .

Essen, 6.7.1836.

KRUPP *to* JACOBI, HANIEL & HUYSSEN,
GUTEHOFFNUNGSHÜTTE.

. . . As the guarantee period for the steam-engine has nearly run out, I have been wanting week after week to come to see you, in order to arrive at the necessary understanding about the reconstruction which has several times been mentioned, but so far I have had no opportunity. You prefer to arrive at the end in view by boring out the cylinder, and at the same time supplying a metallic piston. I also will withdraw my previous demand, if you will in addition leave to me the fixing of a convenient time within a year for this alteration, and, after erection of the cylinder, bored out as necessary, promise to guarantee absolutely for only ½ year more this and the metallic piston, as the main parts on which the efficiency and value of the engine alone depend. This job must, of course, be done free of cost to me, and, as you have already agreed, must not take more than a week altogether. . . .

In your favour of 24th ulto., you express the belief that, as I work with a low steam pressure, an abatement of 160 thalers instead of the metallic piston would be all to my advantage. This sum may already have been lost twice over in excessive consumption of coal, apart from the considerable disadvantages of interruptions. On using the 8 cwt. hammer, when a steam pressure of 35 lbs. is needed, however often the packing of the piston is screwed up a quantity of steam is lost uselessly. If now I instal, as projected, a rolling-mill for round steel bars, plates, and the like, in addition to other plant requiring power, I shall be sorry enough not to have a more powerful engine, and shall have all the more need of a good and absolutely tight metallic piston. I urge again upon your attention the quickest possible repair of the slide-valves, which, as you know, have so long been leaky, and the fitting of a tight steam-damper, for which I should like to see the very first holiday used. . . .

Essen, 6.8.1836.

KRUPP *to* CARL PFENNING, BARMEN.

. . . As regards the hardening of the rollers, however, this is much more difficult and risky, since the rollers must have an equally high degree of hardness all round, and, so far as I know, I am the only one who up to now has managed to harden crucible-steel rollers up to a length of 10″ ; to achieve this, however, has taken many years and has cost a good deal of money ; therefore I now charge a good price for the rollers, and everyone is ready to give a proper sum for such a roller. The turning of such a roller is a small matter, and is accordingly not taken into consideration in the calculation. If I have these rollers hardened for you, I must charge the same price as if I make a new roller. Moreover, I cannot know whether in the forging a mistake may already have been made, and cannot therefore guarantee complete hardening without breaking, whereas I give a guarantee in all respects for every roller completely made by me. . . .

Essen, 8.11.1836.

KRUPP *to* HERR VOSS, SUPERINTENDENT
OF THE REVENUE, STEELE.

It will probably be within your recollection that Ober-Präsident von Vincke inspected my crucible-steel Works last spring, and was then inclined to find me a capital sum of 6,000 thalers from the Ruhr Navigation Fund ; the bond to be entered into was to be made out primarily on the security of the Works buildings, or I had the alternative of arranging for the security of a well-known, safe man. The former was not feasible, because the new plant stands on a piece of ground already mortgaged, and although it exceeds in value the capital lent, so that the new buildings and machinery, which cost 20,000 thalers, carry nothing, yet my offer to assign these as security was (because this loan cannot rank as the first) not accepted as sufficient. As regards the finding of a guarantor, I was unable after all to carry out the design of asking my cousin, von Müller, to undertake it ; for his inheritance has been considerably reduced through my father's unfortunate operations, and later on he also advanced me some loose capital, so that I prefer to avoid seeking to increase my obligations towards him. For the rest, I knew nobody who would willingly do me this favour without self-interest, and to ask anyone about it without being sure of his willingness is a delicate matter, which one is all the more desirous of avoiding when one has once raised oneself so far out of the dust without other people's help. And so, in order not to be importunate to the Ober-Präsident, I have not been to him again, preferring to continue work on a moderate scale and to await the time when I could undertake the larger extensions with the money I shall have earned. Meantime, however, such favourable results have been shewn that it would be only too desirable if our output could soon, if possible, be doubled. In the course of this year, consignments have gone as far as America, and from France, where trial orders gave the greatest satisfaction, I have received every encouragement to extend my business connexions, so that one of my travellers will be going there in a week's time. Within six months I shall probably have had visits paid to Russia also, and even to England, for I have already arrived at the full conviction that the principal articles of my production so far excel the English ones that England itself will be a valuable field for their sale. I am thus again in the position of being able to make good use of an increased business capital, and since I cannot anticipate from any quarter the readiness to help which Ober-Präsident von Vincke might shew out of goodwill towards our national industries, I venture respectfully to address myself to you with the request for your kind mediation. Your position with his Excellency makes me hope that, through representations from you, . . . he might find what is lacking in material security well compensated for by the credit which, fortunately, the establishment enjoys. In that case I should wish that he might be pleased to lend me the previously conceded 6,000 thalers, on the condition of half-yearly repayments of 1,000 thalers, and interest payments as may be decided. If I received half at once, and the remainder perhaps in a month or two, I could pursue undisturbed the fine plan for the extension of the Works, and accelerate the present annual doubling of their development ; it is of course unnecessary to explain how beneficial this will be to our neighbourhood, and even to the State. Pray excuse me for having ventured (in the conviction that you, both out of interest in the success of a home undertaking, and also as a friend of my deceased father, would not be unwilling to do me a favour) to present this request. I hope to learn the decision of his Excellency from your kind reply, and remain . . .

After ten years of hard work, Krupp saw his first successes on the horizon. They were not yet solid fact, but he began to see their possibility. From Flanders and Switzerland his travellers brought important orders ; in Paris the first visit shewed an undreamed-of market ; the young manufacturer began for the first time to realize the poverty of his homeland, the poverty of the pre-1848 Germany. The fatherland denied him everything : it denied him a steady stream of orders that would ensure undisturbed development ; it denied him credit, to build promptly what he lacked ; and it gave not the smallest protection against English competition, which was swamping the Continent with tool-steel and case-hardened rolls. Very well ! He must seek abroad the opportunities he needed, the greater scope and wider sphere of activity. France should give him the orders, England should reveal to him the sources of her crucible-steel technique. Krupp's travellers had reported to him the amazing wealth of foreign industry. Now he wanted to observe and deal for himself. He had been thinking out his trip since 1837, and in the summer of 1838 he left for Flanders and France, only returning in the autumn of 1839, after a visit to the English industrial centres. These years opened his eyes to the enormous scope for industrial and technical activity.

Essen, 12.1.1837.

KRUPP *to* C. SALATHÉ & CO., LANDAU.

Only a very inexperienced person could fail to see what sort of maxims you observe. After I have disposed of the unfounded allegations in your first letter, you search around for anything further to be said against the machine. More downrightness would have been more to your credit. This is the familiar method of those people who do not like parting with money when it is due, as I have often found previously. I have had sufficient encouraging proofs of the justice of the Royal Bavarian Courts to be prepared to avail myself at once, although reluctantly, of this resource, if you do not write me a satisfactory reply by return of post.

To reply to your complaints is superfluous, but here are the replies, in order :—

a. You make the absurd complaint that the axles are not hardened. No one will ever ask for a crucible-steel roller with hardened axles, unless he wants to see them break off.

b. The evenness of what is rolled will sufficiently prove the trueness of the rollers. The reliability of my machinery and my tests here are proof enough to me that the rollers were true when delivered, and no other works can supply you with their equal. If, however, the rollers should really not be quite even, you have only to take them out and send them to me, and you can then have them back at once reground. I pay the expenses, but if nothing is found wrong, they fall on you.

c. To mention that the spindle bearings are of brass, and that they should be of gunmetal or hardened steel, is an absurd quibble. I know from experience what is best, and I supply the machines made as general opinion and experience prescribe to be most suitable. If you want to ruin the axles, have steel spindle bearings made, but not at my risk. . . .

Essen, 14.1.1837.

KRUPP *to* SYKES & SONS, HULL,
ENGLAND.

I am beholden to Swedish friends for your valued address and the information that you are the sole importers of the Danemora iron which the English crucible-steel factories work up into their best product.

On account of its great hardness, my crucible steel is admitted to be preferable to others for many purposes, but my productions here still leave one thing and another to be desired, and I am therefore writing to ask whether you would be inclined to supply me with my yearly requirements, which, if justified by the results obtained (the advantages in manufacture arising therefrom) might perhaps soon rise to 500,000 lbs. If it should prove useful to employ this iron exclusively, instead of the German, this would probably lead to a considerable further increase in requirements. For the moment I should like to know as soon as possible what would be the price, delivered free Rotterdam, and whether I could have, very quickly, a trial consignment of, say, a couple of thousand pounds. For taking receipt, as well as for payment, I would give as a standing arrangement the name of a house in Rotterdam. . . .[1]

Essen, 2.3.1837.

KRUPP *to* J. C. & P. BRÜNINGHAUS,
BRÜNINGHAUSEN.

I have inadvertently delayed longer than I imagined over the reply to your favour of 9th ulto., because I wanted first to know what the latest consignments of iron produced.

There are various troubles connected with the manufacture of crucible-steel bars, a line of manufacture which might be so important if the troubles were removed. The quality of the iron is such that many bars, when cut through at one place, at once break at another, whereas, as several times pointed out, there should be no trace of coarseness visible at the fracture ; in the glowing state, too, the degree of tenacity which I have similarly defined as a strict essential is not present. . . . If only it were possible in our mutual interest for you to get rid of this fault !—The fracture must be fine-fibred—not crystalline—moreover with a metallic sheen—not like most of it breaking off blackish and dull—but quite soft and tough, both cold and in a glowing state. . . .

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[1] The English firm declined the order on account of its insignificance.

Essen, September 1837.

KRUPP *to* CONSUL GRÜNING,
UDAL, NEAR CHRISTIANIA.

I have to thank Herr Lampadius, Professor of Chemistry at Freiberg,[1] for the information that your Honour possesses Iron Works, from which such an excellent quality is obtained that you supply it to English crucible-steel Works to their satisfaction. I am therefore writing to ask you to be so kind as to state the price of the first quality, delivered free Rotterdam, and if you are sure that it answers to the well-known strict requirements for serviceable employment in crucible-steel manufacture, I beg you kindly to send me at once, in order to lose little time, 1 ton through the medium of Messrs. A. Th. Sölling & Co., of Rotterdam. It is well known that my Works, established 20 years ago and now doing well, are the only ones of their kind on the Continent. Now although it is only with competition on the part of the English Works that I have to contend, this is so extensive that I have always had to seize upon all advantages which offer for good and cheap production, in order to be able, as I have been, to offer customers advantages over the English article. The present experiment has the same purpose ; I hope to succeed in it. Messrs. A. Th. Sölling & Co., of Rotterdam, will either, on arrival of the consignment, pay the amount thereof to your order, or as you may dispose at time of despatch. Meantime, I await the invoice, together with information as to price for regular supplies, and shall be glad to know what reduction you can give me on sufficiently large quantities.

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[1] Lampadius, one of the pioneers of gas-lighting, and an early foundry-expert, was an uncle of one of Krupp's travellers, Moritz Thies, who was at that time visiting South Germany and Switzerland.

Essen, 13.9.1837.

KRUPP *to* J. B. STEPHANN, LANDAU.

. . . I had had France canvassed last spring for the first time, and the first trial supplies met with such approval that a projected trip through the whole country may be expected to result in important consignments ; it is accordingly necessary to ensure my position beforehand regarding the method of importation. If I do not succeed in despatching the goods, as previously, through the Weissenburg Custom House, please acquaint me at the earliest date of the minimum for which you would undertake to introduce them at your risk. It will suit me best if the small dealings which I have so far had with you can be continued and increased, but, since the object of all business is profit, which would entirely disappear in the payment of the enormous commission of 35 % asked, I must (while for the present I await your reply by return) enter into correspondence with other houses, which previously made me offers in this matter, in order to have forthwith a safe route without delay, as soon as the articles are manufactured, seeing that my traveller is to be in Paris in 4 weeks from now. . . .

Essen, 24.11.1837.

KRUPP *to* VAN DER SMISSEN, LIEUTENANT-
COLONEL *in the* EAST INDIA ARTILLERY,
INSPECTOR *in the* COLONIAL OFFICE,
THE HAGUE.

Herr D. Uhlhorn, Mint Machinery Maker, of Grevenbroich, has given me your Honour's valued address, and the information that the Mint at Batavia is under your orders.

I am therefore writing to offer your Honour my obedient services in the matter of supplies of Mint dies and rolls. The manufacture of these articles is the main occupation of these Works, and I furnish these dies and Mint rolls, which I make in the sizes shewn in the enclosure, to most of the important establishments in Germany and many other European

States. Herr Uhlhorn has learnt from Herr B. Geiger, retired Captain in the East India Artillery, that at Batavia some 20 coining-presses are in constant employment. This being so, the consumption of dies and rolls will amount to something considerable, and I am therefore all the more desirous that my offers may meet with your kind acceptance. . . .

As to the quality of my dies your Honour will be given a most satisfactory account at the Utrecht Mint, to which I have up to the present been supplying the requirements of Director Suermont. These dies have a longer life than others made of the best English crucible steel. In the manufacture of Mint rolls, my Works have reached a stage at which all the sizes specified are produced of the highest uniform hardness and trueness, and of a durability which up to now no maker has been able to equal. . . .

I should be very glad if your Honour would hand me a sketch of the Mint rolls used at Batavia, and would have the goodness to permit the production of a sample, to enable a proof to be given of what I have stated. . . .

Essen, 2.2.1838.

KRUPP *to* J. C. WERNINGHAUS, HAGEN.

In reply to your favour of 31st ulto., I can easily believe that your customer has had a roller break in hardening, and I should be surprised if the other one in use united the proper hardness and strength,—a pitch of manufacturing perfection which I have been able to acquire only through long and dearly-bought experience. In view of the heavy expenditure which I have incurred in recent years, solely as regards the production of rollers, it is bound to be my greatest care to keep strictly secret all advantages gained (including the knowledge of my special method of hardening), so as to ensure recouping myself.

I regret, therefore, that I am unable to comply with your request. Moreover, I am quite unable to see how you expect to forward your own interests by the policy proposed, since you can in no case get the advantage out of 15 lbs. of crucible steel that is certain for you in ordering the rollers which are to be made out of it (unless you are contemplating making the rollers yourself).

Essen, 6.4.1838.

KRUPP *to* NOELLE, MASTER OF THE MINT,
DÜSSELDORF.

I intended calling about this time to reply in person to your favour of 30th ulto., and to save myself from writing. The journey has been prevented ; hence this letter. In hardening crucible-steel parts I have put up with serious losses in unsuccessful experiments and efforts in order to earn a conformable amount after attaining the necessary skill and sureness, not in order to work for nothing,—an expectation on your part which I really do not understand.

In the account rendered to you for the die-ring in question, the hardening of which involved more trouble and risk than that of two rollers, I have not observed the usual standard of calculation, in which I take into consideration earlier losses, actual costs of manipulation, and some recompense for the failure which may easily occur.

Hardening is a small matter here, inasmuch as the costly plant is available and we have in fact the experience of how an article must be handled. It is therefore mostly successful, and I have turned out goods such as have certainly not yet been produced elsewhere. For that reason also, however, I can only make a business matter of it, and the hardening of crucible-steel products is in fact my main business. Nevertheless, I can shew great heaps of spoilt articles, which certainly justify including the cost of the guarantee. As another proof that I have always served you more cheaply than any other customer, for whom I make a definite rule of the price once fixed, and that I have taken no advantage of your resolve, as you are inclined to believe, may I call your attention to the enclosed account rendered to Herr Zollmann for a ring, for which 45 thalers were paid without demur.

Your die-ring was more difficult, and, owing to the inner projection, much more risky to harden than that for the Wiesbaden Mint. It is so hard internally and such a success that it will last out 10 others. If, however, its value to your establishment is not equal to the figure charged, and you still prefer to make another yourself, I am prepared to leave it with you until you have had a cheaper one made there, and then to take it back without payment, and, so that you may not even lose the cost of labour for turning, I would have the new one turned for you to this pattern. . . .

Paris, 8.7.1838.

KRUPP *to the* FIRM.

. . . The next trip here which Herr Thies makes, let us put another 20 to 25% on to the rollers, as we can, if everything which is on its way here turns out well. I have made people understand that the costs of manufacture and transport are too large and that we have made nothing out of it. That on our first round, when the goods were not yet known, we put a small price on them, so as not to frighten buyers off, and we also conceded a longer guarantee than in other places, in order to earn confidence, and that it is necessary on the next round to make this increase in the price. The point is fairly well seen. When the dissatisfied goldsmiths said that the rolls could be got here much more cheaply, and I asked them why they charged more for their crosses than the silversmiths did, then they too were satisfied. I have easily made them understand the cheapness of the manufacture of rollers with iron axles and steel body, and the costliness of a pure crucible steel of the same fineness as is used for the most delicate instruments, razors, and the like, and those who are giving me orders are glad that they can get what they want so cheaply once again. . . . The first order was brought to me the day before yesterday, the other 4 I got yesterday; before that, I have chiefly been seeing the dodgers about their remittances, and have been unwell for several days; now, however, God willing, I will get to work and see what can be done here. There will be a huge mass of manufacturers to be visited here, if the directory can be trusted.

Now I will add the addresses of the customers, together with prices, and then close, for it is half past 2, and I have not stood up from my chair since 7 o'clock in the morning, when Girod came. . . .

Paris, 27.7.1838.

ALFRED KRUPP *to* HERMANN KRUPP,
ESSEN.

I have just received your second letter, and you will by now have received my third, of 23rd, as well. Herewith I send you some more orders, which will, I hope, soon be followed by others of importance. I expect confirmation of 3,000 francs' worth any day, others of several thousands of francs are under negotiation, and if I were not absolutely obliged to go to England for much greater advantages, I believe that, although there is a general complaint that factories are in a bad way, I could easily get orders for 4 times as much as up to now. I am still thinking about the digression to Lyons, perhaps I shall come back through Paris, then everybody will be here, and I shall quickly get fairly large orders where at present there have only been trial lots. I specially recommend the quickest possible execution of all orders, and the best possible. Our reputation will gain by it, and we should count here in future. Paris is the sort of place where a skilled mechanician can find something to do, year in year out, in all the kinds of things we make. In the 3 remaining days of July I will make a sketch of a machine which will perhaps cost 2 to 3,000 francs ; I am also thinking about hardened rollers of 12 and 10 and 8 inches ; this is not yet definite, but something will come of it.—I am glad to hear that Herr Thies has good prospects ; I suppose I shall soon hear something further. I enclose a letter for him. He must hurry and get to Petersburg quickly, so that we shall have executed the orders at latest by the beginning or middle of November, for I do not believe you can send by sea later. If this time he stays even only 2 or 2½ months in Petersburg, lays the foundation of future business there, and makes a few important connexions, and even if he does not go to Moscow, but makes the necessary enquiries about Moscow in Petersburg : once we have a clientèle in Petersburg, then the rest will follow. He will have the letter of credit from Herstatt. I have heard nothing about it yet. . . .

Just see—I must cut it short now, as I have been writing since 4 o'clock, and it will soon be midday ; so I have lost some orders for to-day, as I generally go out at 8 o'clock—just see, I was going to say, whether rollers of old steel, which is known to be hard, shew the same insufficiency of hardness, and whether, when they are being ground fine, they can still be handled. To get steel strong and hard, you must keep to the correct melting-time and not too high a degree of heat, and the crucibles, covers and plugs must be quite tight. You must never have a cracked crucible poured for rollers. . . . For your replies to my letters and your news of anything happening that I should know about, do make a little note of the chief points, so as not to forget anything. I make notes all day, stop in the street 10 times an hour and note down what occurs to me. . . .

The small crucibles will presumably now be wanted. No reliance can be placed on those of Löhner's clay having held in drying, for the worst crucibles have never cracked on drying. I will therefore remind you of my latest. I bet that, if the *juste milieu* is taken, and the hard mixed with the soft—a little unctuous clay added to the lean clay—then it will be all right. It is not ability to stand the fire that is lacking, but tenacity. . . .

With a view to everything being properly supervised in the Works and nothing neglected, Herr Rüdorf should be busy about the place all the time, Herr Becker should help with sketches so far as he has time, and Ida should take a share in the work by copying, as all the girls and women here in Paris do. As for the supervision in the Works, particularly in the hammer-shop and the smithies, as requisite for ensuring the diligence of the men, the careful working of the steel, and the choice of the correct qualities, I must impress upon Herr Rüdorf to apply himself to this as far as possible.

To save me from writing everything twice over, read the letter for Herr Thies, and note from it what may concern you. Be sure to write to him always about my letters to you, or whatever else happens in the business that it may seem useful for Herr Thies to know. Tell me the address in Petersburg to which Herr Thies has been recommended, so that I may send my letters from here or from England direct to him. I have still no news of the bills of exchange for Herr Thies having arrived from Herstatt. How much cash did you send him ? Has the machine for Künne been long gone, and did it work well ?—Have we now the double stock of all valves for engine and pumps for which I gave instructions? —Now, do not forget anything in this letter. You must not select too brittle a steel for slender rollers (this is in addition to the note for Herr Thies about housings), lest they should crack too readily in frosty weather. Remember me to all, and keep well. I am fairly satisfied so far. Things are going nicely. Take care of the enclosures. Herstatt needs no further notice of the bills for the time.—

Again my heartiest greetings.

Yours, ALFRED KRUPP.

That makes some 30 pages of writing. I only wish that I may not have to repeat anything, as I have lost a lot of time over this.

Paris, 12.8.1838.

ALFRED KRUPP *to* HERMANN KRUPP,
ESSEN.

It is a fortnight to-day since, with the exception of yesterday, I have been able to do anything for the business. I have had rheumatic fever—for 5 days I have not been out of bed ; I had most dreadful pains in all my limbs, so that I could not get up for the bed to be made ; I had plasters all over my back, bleeding at the nose, headache, could not eat—in short, all the inconveniences which the devil has invented. I am now, thank Goodness, quite as well as before, and shall probably have a few months' peace again. . . . I shall not go to Lyons now. I will see whether I shall write to a few people before I leave and perhaps go through Lyons from here in the winter. It is 120 leagues from here and would now be too far out of my way. Write to me by return about the tinsel-rollers—whether the polish is now clean, free from dull spots, and dark, not shining brightly, but black and clear. The possibility of doing considerable business in them here depends on this. . . .

If only you would once for all use the early hours of Sunday for the news for me, since you cannot write during the week, so that every week I may know what is going on at home ! I shall not manage to get out of my room all day to-day. I am again making a draft of an important contract, which may take until the evening.

Do get someone—Ida in any case, because there is no one else to do it, to write me something from Essen about relations and friends. I feel the need. Tell Ida that I have not yet had a chance to do her shopping. It may, however, yet be managed. Do look my letters through and answer everything that is still outstanding, so that I need not write twice. So much writing always makes me ill.

Write me lots of good news about the Works. Is mother back again ? Give her and all at Metternich[1] my love. Tell Fritz I simply could not write at present. I do not think I shall get away from here inside 3 weeks, even if I use every minute. In 5 weeks I have only once been to a theatre. . . .

Paris, Sunday, 9.9.1838.

ALFRED KRUPP *to* HERMANN KRUPP,
ESSEN.

I have three letters to answer, the last being that of 2nd. That is one more job of which I am afraid before I begin. So everything as short as possible, because the enclosed sketches and orders alone mean a bit of sitting still. It looks as though I shall never get away from Paris, and yet I must, for I look upon a trip to England as much more important than my business here, on account of the improved methods of manufacture of which I hope to get hold. Before I leave Paris, further important contracts will have been made. Meantime, here you have the 52nd order, scraped together in 36 expeditions, and amounting to about 24,500 francs altogether.—. . .

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[1] The residence of von Müller, Krupp's cousin.—Translator.

2 crucibles in one mould is not so good as a single one. The plunge of one lot into the other brings air and tiny holes. With these thin castings, there is less dross at the ingate than with thick ones. The steel from a single pouring is more uniform. For heavy rings, heavy crucibles can in any case be used. . . .

Do get Kämmerling to inspect all the fireplaces properly, and give the night-watchman a strict admonition to go through every room and every workshop in the evening and a couple of times at night as well, and to look in the fireplace. We know how easily a fire can start, and a fire in the Works would ruin everything, everything. I suppose we might have a second night-watchman to check the first, and a third to keep an eye on the second, and in the end all three would be asleep together. It is annoying that the night is not in the day, because one never knows whether the strictest injunctions will be even remotely obeyed.

I shall probably have to stay here another week or more ; I cannot manage to get finished. My next letter should bring the last batch of orders. . . .

Anything for me can still be addressed here ; I am on very good terms with the proprietor of the hotel. Should I be gone when a letter comes, he will send it after me. . . . I must now give up writing and sketching for 1 day. When I am moving about, I keep well. But just 1 letter like this makes me unwell for 2 days. A letter of thanks to Sölling will go off by next post ; give him my kind regards, and make my excuses for neglecting to write to him, explaining that I have been overwhelmed with clerical work. I have been meaning to write to Uncle Schulz for a long time ; but when I have finished writing business matter, I am done up.

Remember me kindly to all. To-morrow or the next day, the orders.

Liverpool, 24/28.1.1839.

ALFRED KRUPP *to* HERMANN KRUPP,
ESSEN.

You will have had my last letter, with sketch ; what I still want to remind you about in connexion with the execution of the first Petersburg order follows herewith. When I have received your reply to my last letter, I shall have got so far with the language, with introductions, &c., that I can leave for the places where I still have to arrange what is most essential to the object of my journey. I hope that you will have succeeded in piecing together the scraps which I gave in my last ; as this sheet will hold a good deal, I will now fill it up with a few lines not on business but on personal matters, beginning with the hope that you are all well and happy. Then the next hope, that there will be plenty of work. I hope to hear in your next letter about all the latest news of any importance. . . . Fritz[1] will, I suppose, have been at home until the middle of January, and will have spent the time pleasantly, working well at the business inside and outside, and amusing himself well at Lucanus' and the club. You will have read in the paper about the latest storm that has been raging here. The very oldest people can remember nothing like it. The largest three-masters, ships worth £30,000, have been smashed like egg-shells against the rocks, and cargoes worth from £300 to £500 have thus been lost. Here on the coast I have counted a large number of steamers and ships with the top of the funnel or the flag just shewing above the water. A lot of chimneys have fallen in the neighbourhood of Worcester, and houses and chimneys in Liverpool. I hope nothing of the sort has happened over there. I should be anxious about our roofs. . . .

I have received your letter, which decides me to pack up at once and go to Sheffield, Hull, and Stourbridge, near Birmingham, and to see and buy what is still necessary. Before getting the reply to my last letter, I should have been glad to wait longer, as I should still have been making very useful acquaintances, who would have stood me in good stead in

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[1] Alfred Krupp's youngest brother.

Sheffield, but now, as there is such a scarcity of work, I will content myself with what is already certain, enough amply to repay the journey. It is certain, from what I have seen here, that the manufacture of a good quality steel depends only on the iron, and cracks in bar-steel, as well as dull spots in tinsel-rollers, will no longer occur if we work up the right iron, which I am thinking of procuring in Hull. I shall take as little as possible, and have written to Sölling at Rotterdam for the credit. If only I have no trouble in getting the iron because I cannot take a big lot at once, and it may be looked upon as not worth while.—This trip costs money and eats into the year's profits ; I knew that just as well before your last letter ; it is, however, as necessary to our bar production as coal for the furnace of our engine, and in future years it will be the sole cause of increased profits from the extension of our bar production,—if ever this should somehow be possible. A good friend will accompany me to Sheffield and will assist me there, and wherever necessary will go arm in arm with me, so that it really is not possible to go astray, and as up to now in England I have had extraordinary luck in every direction—a favour which our good Lord does not do everyone—I am confident that He will continue to lead me to my contentment. Only yesterday, at a place 5 miles away, where I had gone for a walk with Fritz Sölling, I saw, without any introduction, a new rolling-mill for copper-plates, which has only been working for a short time and where no one is admitted. I was properly booted and spurred, and the proprietor was flattered that a couple of such good fellows should deign to inspect his Works. If only no money difficulty arises at home meantime, I shall return to Paris extremely pleased and content, and shall soon get hold of work for us there. I have always been afraid I should hear the news about Somborn, and *we shall never get from Brüninghaus the iron to make the kind of steel that is satisfactory for edged tools.* If this cannot be done on my return I shall be at my wits' end, for it is only a matter of materials. I want you to let me have a reply in London to the most essential points in this letter ; if in the meantime you have answered my last, Fritz Sölling will send the letter after me. I shall expect to get in London the reply you send by return, perhaps after that

I shall have something more to arrange ; I can hardly be in London inside a fortnight, so that there is time enough to address a letter there. Send the letter, with my address " A. Crup," to the proprietor of the Sabloniere Hotel, Leicester Square, London. I shall put up there. . . .

Now I will close, as I still have to take my leave at a large number of houses, and many of the farewells are very sad ones. You cannot imagine what good-fellowship the people here have shewn to me. I have not had my meals at home $\frac{1}{3}$ of the time, and so I have learnt English at less than $\frac{1}{3}$ of the cost. Only travelling is enormously expensive, and hotel accommodation ; so I shall be off as quickly as possible, and shall perhaps stay only 1 or 2 days in London until my passport is in order. Give my very best wishes to mother, grandmother, Ida, and all relations, and also Herren Becker and Rüdorf. You said nothing about them in your last letter, and I agree that only welcome news should be told. My 6-months' journey has grown a long tail. You will presumably write to London to let me know how money matters stand. . . .

To-morrow I shall be ready to leave. I shall expect the reply to this letter in London, as already said. I hope that uncle is expected to be better soon. Postage in England is curiously charged ; for sheets as big as a house there is no more to pay than for the smallest scrap, if only it is single.[1] If, however, in the smallest scrap you put only a slip the size of a silver penny, the postage is doubled. If you write to me in London on a sheet like this and put " Single " on the outside, it will cost only single postage ; there must of course be no envelope. Little sketches, &c., can always be made in it, as you can still so arrange them that they are not seen by anyone peeping into the letter.

And now a hearty farewell to all.

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[1] A " single " letter was a single piece of paper not exceeding an ounce in weight.—Translator.

Paris, 13.3.1839.

ALFRED KRUPP *to* HERMANN KRUPP,
ESSEN.

Your letter of 8th reached me safely. You will meanwhile have received my two letters from here. I should long since have written more in reply, but I must still keep from writing, as I have a bit of a cough, and on that account I am to-day writing only the most essential. Up to to-day none of the consignments, which were advised on 20th December, and 7th and 31st January, has arrived. All here are indignant, and I am afraid that one or two may even refuse delivery. This delay will be very awkward for us on account of the payment, which we get so much later. In no case can we draw earlier than 4 months after arrival of the rolls, counting from the date when they are packed. I do not believe that, even with the best of luck, consignments via Havre go so quickly. . . . I see in the letter to Girod a case advised for W. Louis at Lyons ! How is that ? To send via Havre to Lyons is almost like sending from Essen via Steele to Stoppenberg. Havre is nearly as far as Lyons, and then all the freight on it too. . . . Lyon Allemand is not satisfied with the rolls ; both have already been rubbed down with emery. Most of the goldsmiths get their gold there, and hear this. So it does a lot of harm. I have hesitated to go there, and I shall wait a few days longer. Mind you serve Scovena very well ; many have waited for him before ordering. . . . As for sending rolls to England, we cannot very well manage that, as they are prohibited. When we have everything straight at home, we shall perhaps have to see what can be done. Whether it is worth while establishing a factory there. . . .

I have been wanting all the time to write to Fritz, but I simply cannot yet. I am no better broken in to writing, and when the most essential has been done, I always have a very tired feeling in the chest. Otherwise, apart from the cough, which does not trouble me much now, I am quite well. When you have a chance, write and tell Fritz what I am doing. . . . The iron from England must only be used for the finest things, which must have clean polish and hardness. . . .

We must not sell a single lb. of steel made from it, but be sparing with it, so that it will last us out until we can buy at least 100 tons at a time and pay cash, because they will not supply a trifling quantity a second time. When it arrives, you can, for a first test, put some 300–400 lbs. into the cementing furnace, and have it cemented fairly hard. Do not take more, as this iron is too expensive to lose even as much as 10 lbs. through an experiment gone wrong. . . .

My very best wishes to grandmother, mother, Ida, and all at home.

Your ALFRIED.

Other than business matters next time.

Paris, 24.4.1839.

ALFRED KRUPP *to* HERMANN KRUPP,
ESSEN.

I have just come from the Mint, where I have been every day for a week. I have hardened the dies. The first of one kind has made up to to-day 147 thousand coins (5 francs) and will make 400,000, since no wear can yet be seen. The other kind has made fewer, yet enough ; yesterday we hardened afresh, and feel sure that the others will be quite satisfactory. The officials are delighted, and I am made quite at home in the Mint. I am sure of the contract for the dies, and, I hope, for the rolls as well. I have quoted the prices to-day, and have an appointment early to-morrow with the Director, when I shall hear the decision. I am almost intimate with the officials ; they are all nice to me, and when I have an hour to spare, I go there and have a chat with them. So poor Herr Thies has passed away![1] I was expecting the news. More about this later, as I must close. Write to Voligold for the letter to be sent home to you ; I had written a good many things in it, including some about Vollgold himself. The letter ought not to get into wrong hands. The question of a traveller will need consideration ; it will be very hard to find a suitable one. . . .

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[1] Thies died in Berlin on 12th April, 1839, after his return from Russia, where he had been taken ill.

Paris, 13.5.1839.

Alfred Krupp *to* Hermann Krupp,
Essen.

If you see it stated that a revolution started here yesterday, do not be worried about it. It began in the quarter where our customers live ; it is said that the streets were barricaded and omnibuses overturned, as a protection against the soldiers, and there was fighting with the soldiers and shots were fired, and so on. All night, soldiers were to be heard marching through the streets ; that is all I know about the whole affair, and, where I live, the old women are a little afraid, and that is all. It is not quite suppressed yet, but will probably end to-day. If it improves business, for the citizens to use these methods to extort a Ministry,[1] then in the devil's name let them go for one another. For my part, I am satisfied about business, but many of our customers are at the moment suffering badly and have hardly anything to do. This morning I made a sketch of a rolling-mill at 10 thousand francs, to lay before a certain man ; I am not sure that it will be accepted, but I am just going to put on my boots, and shall have more to say in my next.

Brussels, 5.8.1839.

Alfred Krupp *to* Hermann Krupp,
Essen.

Yesterday I arrived here, travelling by way of Havre, Lille, Courtray, Ostend, Bruges, &c. The places so far visited offer no prospects for us, at any rate the French ones. For the rest, you will have received the orders from Rouen. I now have still to visit the principal places here, Ghent, Brussels, Antwerp, Liège, &c., and think to be in Cologne in about a fortnight's time, where I shall expect to find that Fritz[2] has the information I want, especially as regards Herstatt; before coming home, I shall probably go as far as Coblenz, if the Ober-Präsident is there, in order to thank him for his introductions, and to give an account of the success of my trip.—My principal object is to gain his favour in a higher degree and ensure his willingness to render more important services in future. . . .

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[1] No regular Ministry had existed for 2 months. The rising was an attempt by Republicans, under Barbès and Blanqui.—Translator.

[2] The friend of Alfred Krupp's boyhood, Fritz Sölling.

Krupp's return from England and France came at a time of deep economic depression, connected with the displacement of the handworker by the rise of machine industry. Loss of subsistence, lack of purchasing power, the dying-out of a wide class of little independent producers; then workmen's riots, the first appearance of an industrial proletariat, bankruptcies, and lack of money and credit, accompanied the disturbed beginnings of the age of factories. England had known all this earlier, now the Continent was experiencing it. Krupp suffered from it: his old clientèle of goldsmiths and silversmiths, which seemed to have just increased tenfold in Paris, died out within a few years, as though of a great pestilence. Lack of money restricted the consumption of ornaments; and the semi-manufactured products previously produced by the handworkers were now supplied by the great factories for gold and silver plated goods. A demand arose for large rolling-mills, but the general decline of business limited the occasions of providing such plant, and purchasers usually contented themselves with the cheaper English case-hardened rolls. Thus Krupp entered upon an uneasy struggle for occasional large orders, and had to try and snatch contracts under hard terms of guarantee and with long credit. For years he saw his Works only for a few weeks at a time, generally travelling about in a difficult search for business; his little undertaking swayed for some years up and down between the chances of rapid rise and threatened disaster.

Essen, 14.9.1839.

KRUPP *to* C. TEGELSTEIN,
ST. PETERSBURG.

. . . With the next consignment of steel I shall probably enclose some samples of spoons and forks, produced by means of rollers (instead of stamping). Up to the present few such machines exist, though their advantages are fairly well known. It is sufficient to have patterns of the forks and spoons, in order to arrange the rollers to turn out similar shapes with any ornamentation or engraving desired.[1]

It is really a great pity that your Government puts such obstacles in the way of the establishment of your Works. It would be very welcome to me if I could again continue the work which has been stopped ; a great deal has already been lost over it.—The writer of this, Alfred Krupp, had already counted on the manner in which your rolling-mill has been constructed winning him the confidence of the Authorities of your Mint on his intended trip to Russia next year, and making them customers in future.

Essen, 25.9.1839.

KRUPP *to* NOELLE, MASTER OF THE MINT, DÜSSELDORF.

. . . In Paris the whole die is hardened with no further protection than a little rim of the thinnest sheet iron, which, after binding with wire, can be bent with the fingers as far as 1‴[2] over the engraved surface to protect the sharp edge. For this purpose the sheet iron is cut as here described. . . . The dies are hardened there through and through, and only tempered a faint oaten-yellow colour. Up to now these dies have been made of ordinary German steel. . . . If it suited you to make the intended tests soon, I should be very glad, so that, in case there was anything more to be altered, I could make a second trial before my approaching departure.

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[1] The newly-invented Krupp spoon-rollers.

[2] That is, one " line," or one-twelfth of an inch. The Prussian inch was a trifle longer than the English one.—Translator.

Berlin, 24.12.1839.

KRUPP *to* BARON V. BODELSCHWINGH-VELMEDE.[1]
(*Rough draft.*)

Your Excellency,

In virtue of your permission, and of the willingness which you deigned to express some months since, for me to apply to you for introductions when these would be of assistance in the journey which I have now undertaken, I herewith take the liberty of troubling you with that request.

I aim at extending my journey from here through Austria to Italy, then to Russia and the remaining European States, in order to make use of the reputation, which I have already gained everywhere, to secure as extended a clientèle as possible.

In the first place, I should very much like to have an introduction to Herr Beuth, Senior Privy Councillor for Finance, to whom I am not known. In his position, he will have to investigate an intended application of mine for the grant of a patent for a new invention,[2] and if he were well-inclined towards me, he could perhaps, with his extended circle of acquaintances in the industrial world, give me further very useful introductions.

I shall in particular need an introduction in Vienna, to facilitate access to the Authorities of the Imperial and Royal Mint, and to gain their confidence. Prince Lobkowitz, who has up to the present been in charge there, shewed no favour to my traveller who was commissioned to offer to supply the considerable quantity of dies and rolls used there, and I shall accordingly have to exert myself now to gain his good graces.

I am doubtful whether I shall find a chance here of an efficacious introduction to Vienna, unless your Excellency will be good enough not to call me immodest for most respectfully asking you for one. . . .

With the most entire respect, I have the honour to remain.

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[1] Ober-Präsident [Lord Lieutenant] of the Rhine Province.

[2] The invention in question was the spoon-rolling-machine. The Prussian patent was, however, refused.

Vienna, end of
September, 1840.

Written in Alfred Krupp's *travel diary, respecting the guarantees offered to the* Imperial Mint *in* Vienna *on the erection of a new Mint rolling-mill.*

Proposal made to Count Diderichstein, and submitted on a printed form of contract.

As an exception to the above general permission, and as proof of the confidence of the Works in the quality of their supplies, I undertake to supply a rolling-mill to the attached sketch, with hardened and polished rollers of crucible steel of sixteen inches effective length and six inches diameter, erected ready for working, at the price of five thousand florins (20-standard),[1] which may be paid to me within one to two years after the mill has started working. I guarantee that the hardness, trueness, and endurance of the rollers shall be such that copper, brass, silver, German silver, and cold pure sheet iron can be rolled therewith, without their uninterrupted use causing any injury to the entire clearness of the surface. The indestructibility of these rollers is well known ; they hardly need to be reground once in a period in which cast-iron ones require it fifty times, and I undertake to carry out the necessary regrinding during two years for a payment of twenty florins.—Should the rollers, or any part whatever of the mechanism to be supplied, break within two years or lose its serviceability, I bind myself to make replacement free of charge. The advantage, which these rollers shew in use, consists in the fact that, in virtue of their guaranteed endurance, less cost is incurred by using them than by using the cheaper iron rollers, since it is only a matter of the interest on the capital, and the expense of frequent replacement is saved,—and also that, with the same water-power, in consequence of the decrease of friction (because of the mechanism and of the thinner axles and cylinders), they will in the same time turn out a third more than the 16 and 22 inch rollers at present in use. The employment of the rollers also presents the substantial advantage that the thinnest sheets can with certainty be extended singly, quite uniform in thickness, quite flat and without cracks, down to the thickness of a sheet of paper, and these sheets themselves receive the polish of the rollers, so that they are of the greatest utility for silver and plating. . . .

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[1] i.e. the standard then prevailing in Austria, a florin being worth a trifle over 2 shillings (20 contained a Cologne mark weight of fine silver).—Translator.

Essen, 27.2.1841.

KRUPP *to* G. HENNIGER, NEUWALDAU.

For the last couple of days I have been in the domestic circle once more. The trip has completely restored me. So, after having looked around me a little, I want first of all to tackle the pleasing correspondence with yourself. The sketch of the rolling-mill for Neuwaldau is finished, ready for the distribution of work. I only await advice from you whether, on further reflection, you find that your interests are served by our agreement standing. Without any idea of your being tied to it by consideration for me, I will now tell you what I have provisionally thought and done.—As soon as it is necessary, a man shall be there to direct the construction and erection of the rolling-mill.—For looking after the manufacture, I have provisionally selected a cousin of mine, who is a gold and silversmith, and of my own age. He is a very clever worker in his trade, and very energetic. He has been in Vienna, and is now in Paris.[1] He is ready to go so far as to take employment as a workman in a German-silver factory in order to acquire all necessary information, which, with his zeal, he will soon possess.—For the mercantile work, I have my eye on a young man, who will, I believe, accept my offer. He is my oldest friend, and there is no one else whom I would trust so much.—The one thing I should have to fear from him would be that he would soon supplant me in your affections. I can vouch for both of them being first class in every respect.

Now that my travels are over, I can prepare with an easy mind to remain at home in future and devote the greater

[1] This was Alfred Krupp's cousin Adalbert Ascherfeld. The agreement fell through, however, owing to other plans of Henniger's.

part of my time to our mutual undertaking, the activity of my brothers freeing me from all anxiety. I need hardly state that it was difficult at first for me to make up my mind. I always look upon the Works here as my child, and a well brought-up one at that, whose behaviour is a joy ; who, indeed, would not want to have as much as possible to do with such a child ? As, however, things are in such good hands, I can turn to the other business with pleasure, of which there will be no lack, once I have done my small part in its development, and that of course is the thing that makes one begin to grow fond of a child.

I could wish, above all, that you first had things so far settled with your undesirable associates that you could call yourself independent, and had nothing more to fear from that quarter. What you may have decided during your long stay in Berlin perhaps makes it superfluous for me to give my opinion of how you could best order your relationships ; still I will put it before you for what it is worth.— . . .

For the rest, these remarks must not have any such weight with you as to make you decide on these lines out of consideration for me. However you arrange matters with Herr R., and whatever plan you may have sketched out for our mutual management of the German-silver factory, I am in agreement with everything beforehand, and assure you of my services in everything for which you may desire them ; only I will never have anything to do with your Herr R. and Herr J. in the management ; should they remain I should in any case renounce any part in it. . . . I hope and believe that you will thus attain your end ; it is, I think, impossible to doubt that you will then live a more contented life than in any other circumstances. Next to the well-being of my family, I know no one whose good fortune I have so much at heart as yours. This is a necessary consequence of your manner of thinking and acting, with which I am sufficiently acquainted, and of the proofs of undeserved affection which you and your respected lady have shewn me. If I can be of service to you in future—whether we carry out our provisionally discussed plan for a joint factory or whether in view of the circumstances you prefer to drop it—nothing shall stand in the way of my readiness so far as my power and conditions permit. If we are to manage the business together, I renounce all profit until my conduct of affairs justifies it, and am quite willing that my profits shall go back into the business during the first couple of years, until the losses which may arise from your dealings with Berlin are made good. I can guarantee that the business will lose nothing if, to begin with, I still continue my journey abroad. I would arrange so as to come there at least twice this year, and can fully rely upon the people whom I am getting for you.

In conclusion, please remember me most cordially to your respected lady, and to Fraulein Klewitz and your children. And lastly, be again assured of my warmest friendship (if in view of the difference in our ages I may use this expression) and of my sincere desire to be of service.

Vienna, 14.4.1841.

KRUPP *to* G. HENNIGER, NEUWALDAU.

You will be surprised to hear that I have already been here a week, and that I should not have received your letter of 24th ulto. in Nuremberg if I had left there a couple of hours earlier. On the journey we generally set up our quarters for the night in the carriage, and were so busy during the day that I should not have been able to find a moment for a reply, and only to-day have I managed at last to take up a pen. I was not able to make the enquiry of a lawyer or merchant in Nuremberg, and, as the Bavarian law probably has nothing in common with ours, I thought it unnecessary to wait there for another night and day on that account. . . . Since Herr R. asked how you wanted to have things arranged with the firm, it seems to me that he has already conceded you the right to decide. If, however, you make over the business to him under the terms of a contract, I think this will include the existing style of the firm, under which the business has hitherto been carried on, a name already known and enjoying credit. I am anxious to hear the outcome of your present scheme; I heartily wish that it may turn out in accordance with your expectations, and if you will let me have news in due course I shall be very glad. I have no recollection of your having already mentioned this plan in Berlin, nor has Herr Strecker, but I am at least certain, when I recall our final declaration and decision, that it was in no case to affect our agreement regarding the intended factory in Neuwaldau. The present state of affairs is altogether so different from what I imagined at that time that it would now be, that I can arrive at no conception of the future.

This is only intended as an answer to your remark, with its implicit suggestion that we were premature in devoting such valuable time to a very uncertain affair, and is not meant as an expression of dissatisfaction, for in my letter of 27th February I freely left it to you, as though by presentiment, once more to think over everything that had been agreed and to alter it as you pleased to suit your interests ; moreover, I am glad to revert to my earlier plan of life, for I had difficulty in altering it for the behoof of our proposed joint undertaking ; and I am still always ready and willing to serve you in this in any way possible.

Now for another matter. In Frankfurt I met Herr Blan, who had come there to see to business at the Fair. He knew something of our plan of starting a factory at Neuwaldau, which I confirmed, remarking, however, that in accordance with our agreement I could not give anyone further detailed information, and therefore could give none to him. That was the whole of our conversation.—My mother has written to say that, if you could arrange it, she would like you to come and stay with us as early as the middle of May, so that she might be the more certain of meeting you, as she is thinking of going away later on, towards June. If, however, you cannot come until later, the old lady's absence must not prevent you from making a long stay. My sister, two brothers, four tilt-hammers, and a couple of cousins will provide sufficient entertainment to prevent the time hanging on your hands.

How long I shall stay here in Vienna I do not yet know ; perhaps for a long time, but it is also possible that in 1½—2 months I may actually go to Russia. It would be a pleasant surprise if you should come here some time this year.

Now remember me most cordially to all at home. Your tacking " —kin " on to my name appeals to me as suiting my breadth, and flattering as regards the sentiment to which I owe it. I remain, as always, sincerely yours.

Vienna, 16.7.1842.

KRUPP *to* BARON KÜBECK *of* KÜBAU,[1]
VIENNA. (*Rough draft.*)

Your Excellency has been so kind as to permit me to state the circumstances which obliged me to appeal to your protection in the matter of the rolling-mill supplied by me to the Imperial and Royal Head Mint.

The report on the condition of this article from the Committee appointed to test it will shew—with reference to my special statement submitted to the Committee on 15th inst.—that the obstacles placed by the Head Mint in the way of the settlement of my affair cannot be justified by anything which has occurred in the working of the machine for which I am really to blame. Instead of any agreement to the various offers which I have made since 6th Sept. last, with a view to concluding this business, I have received nothing but communications professing goodwill, but filled with complaints—in which the most inconsiderable incident was depicted as of dangerous magnitude—even contradicting the statement made by the Head Mint itself to the Presidium of the Imperial Treasury before the contracts were placed, a statement which furnished a reasoned eulogy of the special features of the well-known design of this machine—the uncontested merits of which are universally recognized.

From the report of that Committee I now await confirmation of the fact that all the obligations of the two contracts have been fulfilled, and in some cases substantially exceeded, with the single exception of one, which was forced upon me by the Warden, Herr Happenbauer, by means of a false assertion, and which is not material to the working as carried on here.

The following was the manner in which I was induced to accept the task now shewn to be impossible, and I am prepared to confirm by oath the truth of this.

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[1] President of the Exchequer for Mining and Coinage.—Translator.

After I had sent in my first offers for the 5 machines (which I afterwards supplied), with the general assurance that they should work more accurately than others not of my manufacture, the Warden, assuring me that the rolling-mills formerly worked by the Head Mint in the Münzgraben had produced the 3-kreuzer[1] fillets with precision—demanded the acceptance of a corresponding special obligation for these and larger coins, of the small silver currency, ostensibly in order to ensure obtaining Treasury approval for this plant.

Uniform inner density of the fillets was implied by this assertion. Assuming that the head technical official of such an important establishment must have knowledge of his work and be trustworthy, I had no hesitation—relying on this assurance and on the efficiency of my rolling-mills, superior to all similar products in precision and endurance—in adding a promise that 3, 5, and 10 kreuzer fillets should be rolled with precision. . . . In the course of bringing the machine into operation, variations occurred in the finished fillets, the cause of which, in view of the fact that the uniform inner density of the fillets had been assumed and repeatedly asserted by the Warden, had now to be blamed upon someone else. It was therefore now sought in a lack of proper concentric curving of the finishing rolls, some of which I sent back to the Works at my expense for the most exact precision-grinding ; yet the Head Mint was, according to its communication of 26 Dec., still less satisfied with the result later obtained on using these rolls after their return.—Meanwhile, the real reason of the impossibility of complete performance of the task set had been shewn to reside in the fillets themselves ;—though an approximation can be arrived at by putting them through the rolls several times. At the same time I learnt that, while the rolling-mill in the Münzgraben, to which the Warden's assurance related, was in use, even the weights of the individual coins produced had not been uniform.

Instead of the Warden now, like an honest man, himself undertaking my defence, in view of the circumstance which had induced me to accept this stipulation,—all the more since this point has no particular importance in the present work of the Mint, which is not producing small currency,—it became clear, in the whole of the conduct observed towards me, that this contract stipulation, in its original intention—for use as necessary according to the requirements of private interest—was a trap set for me; against which I, being of an unsuspecting character, and confident, from earlier results, of the efficiency of my machines, had no thought, when drawing up the contract, to protect myself by quoting the verbal assurance given to me.

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[1] A kreuzer was $\frac{1}{60}$ of a florin, or about $\frac{2}{5}$ of a penny.—Translator.

In this position, placed in the most unfavourable light before Prince Lobkowitz by favoured persons—whose names and disgraceful measures to injure me I am prepared to communicate verbally to your Excellency, if desired, together with proofs—and on this account already unable to make good my case to him, I decided to offer the free supply of 2 machines, as partial compensation for the alleged defects and non-fulfilment of the above contract obligation.

This too was in vain, and I have since then again lost more through the added delay than I had been prepared to sacrifice to arrive at the conclusion of the business.

Being forced to stay here until the matter is settled, I have since then lost over 20 thousand florins through lack of attention to the business of my Works, and have in addition incurred here unnecessary expenses amounting to over 7,000 florins—in order to save my capital I have sacrificed from first to last more than the amount involved.—In consequence of these losses and of being deprived of the (for me) considerable sum due for the rolling-mills supplied, I have been brought to the brink of ruin.

The sacred duty of protecting my rights and my family now urges me to give this present faithful account of all the pertinent circumstances, your Excellency having cleared the path for this by the investigation which has been set on foot; and I want to submit it to your judgment whether I am to be the victim of the persecution to which I have been subjected and of the confidence which I felt in the representative of an Austrian Department which in my fatherland I have been taught to respect, or whether I may now expect a decision, in place of the offer which I made under duress.—Above all I entreat your Excellency for the favour of the quickest possible decision of my fate, since any longer delay increases my loss.

Moreover, in my present position relative to the Head Mint, I am compelled, in order to avoid all direct influence which might further be exerted over me by hatred and persecution, to beg respectfully for complete release from all further connexion and contact with that establishment ; seeing that the working of my machines up to the present has sufficiently demonstrated the excellence of the component parts. . . .

Vienna, 2.8.1842.

KRUPP *to* BARON KÜBECK *of* KÜBAU,
VIENNA.

I respectfully beg your Excellency to pardon this obtrusiveness.—I am forced to this urgent petition for consideration of my position by a report, received to-day from my Works, that the deficit in the business capital, caused solely by the losses of which I have informed your Excellency and by the delay in payment for my supplies to the Head Mint, now amounts to over 60 thousand florins, and will entail unavoidable ruin, unless a part of the purchase price is paid to me on receipt of this application.

A flourishing factory, which was making a fine yearly profit, will be hopelessly lost unless my petition is granted, that at any rate the amount of the one contract of 23 Dec. 1840, which has been fulfilled in all respects, may be at once paid to me.

Well recognizing that I can make no claim in law on your Excellency for unusual despatch in my case, I yet confide in your gracious considerateness.

Without this, even should all the desires which I have expressed be later conceded in full, I shall be past helping. At this moment I stand on the extreme brink of the abyss ; only immediate assistance can still save me.

With clipped wings, and turned grey at thirty by anxiety, Alfred Krupp returned from the adventure of the Vienna Mint rolling-mills. A quickly gained—and scarcely even gained—competence had been lost again, and his trust in men's honesty was gone for ever. That lesson learned, he began, with the aid of his brothers, to build up again. As a basis there remained the Works, all too quickly extended on the prospect of quick gains, and now loaded with debts. A partnership with Schöller at Berndorf, near Vienna, for the exploitation of the spoon-rolls, and another with Sölling in Essen in order to obtain capital, kept the undertaking above water for a couple of years; there were burdensome financial ties on all sides, but there was safety from the threatened collapse, and a possibility of quiet recuperation. In these years appear the beginnings of all the progress and the inventions which later made Krupp's name world-famous, the indestructible railway-material, the weldless tyre, the crucible-steel guns. It was spade-work of all kinds, long without any fruit worth the mention, but with the germ of development. For years yet, the rolling-mills formed the firm base of the business; by their side, the new developments slowly conquered ground, on which the later successes could grow. The fatherland remained, as before, aloof and unhelpful, niggardly of recognition and sterile of profit; it was mostly in France, England, and Russia that Krupp found bread for himself and his slowly growing band of workmen.

Essen, 9.7.1843.

KRUPP *to* PETER BRÜNINGHAUS,
BRÜNINGHAUSEN.

I have given your driver 2 pieces of cold-rolled iron wire for conveyance to you, and take occasion with these presents to write to you on the subject. It is said that the English supply their iron wire so very cheaply, and I am therefore of the opinion, since the costs of manufacture consist mainly in wages, that they employ a cheaper process than that of drawing, and it seems to me all the more probable that they roll the wire thinner, since rolling at a red heat, as now done, has already presented great advantages, and my attempts hitherto to roll iron cold up to 1‴[1] ○ have demonstrated

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[1] See note on page 62.

ST. DEINIOL'S LIBR
HAWARD

that this manipulation can be carried out with great rapidity and little power.

From a bar of iron 7 ‴[1] □ the accompanying sample of wire was rolled and 4 times annealed. (The iron was not quite pure and there are therefore some rough places in it.) I believe that with the same power and the same wages 4 to 6 times as much can be rolled as can be drawn. I am sending you this sample and detailed information, because you have wire works, and I should like first of all to know your opinion, and what you think of it after you have examined the sample with some care. The rolls did not fit together as well as they ought, and therefore the wire is not quite even ; this, however, is a small thing to arrange, once the idea is shewn to be sound and worth spending money on.

Essen, 16.7.1843.

KRUPP *to* LIEUTENANT VON DONAT,
SAARN.

Taking advantage of your kind permission, I have the honour to send you a musket-barrel forged solid from the mildest crucible steel. . . . Above on the barrel I have left standing a wedge-shaped piece, which can be cut off cold, and on which any desired test of the tenacity of the material can be made. I believe that this will suffice to justify an expectation of the best results from this experiment, even before the barrel is completed. Although, as remarked verbally, I do not count on the State making an alteration in the method of musket-manufacture, and regard this sample as only a standard by which to judge on a small scale the usefulness of this material for *cannon*, yet I will afterwards make an attempt to forge such crucible-steel barrels directly as tubes, and believe that it will succeed. You allowed me to hope that Captain v. Linger will be interested in the subject. As soon as, through your kindness, I have received an intimation of the result, I will pay my respects, which I was unfortunately unable to do when I was in Saarn last Sunday evening. In order not to lose any time, I am sending herewith in the first place only one barrel, but as soon as convenient

[1] See note on page 62.

I will follow it up without delay with a second and a third, if this will be of service in carrying out the strictest test of the quality of these barrels. I hope that your opinion of my plan of making cannon from the crucible steel in question may shortly be more favourable than that which you expressed to me yesterday. . . . .

Essen, 16.9.1843.

KRUPP *to* POELMANN, MASTER OF THE MINT, UTRECHT.

On my return from my brief visit to England I have been busy with your project, having first, with Herr Vrolick and Herr Uhlhorn,[1] seen all that was necessary concerning it—the rolling-mill in London and the method of manipulation. As Herr Vrolick too convinced himself, the principle of the London rolling-mill and the method of manipulation confirmed my statement that it would be money thrown away to make new plant to take your old rollers—and I should have to decline to do it, as it would be no credit to me. On the other hand, I am convinced that, if you are not averse to investing in a few pairs of crucible-steel rollers, you will, in spite of the outlay, work much more economically than with any others and particularly than with the London apparatus. In the name of my firm, I am making a general preliminary report, which I am addressing to Herr Vrolick, but at the same time I am herewith offering in my own name a friendly invitation to you, to visit me with Herr Vrolick, if only you have a couple of days to spare. At the present moment 1 set of breaking-down rolls and one set of finishing-rolls are being manufactured for the Paris Mint, and there are besides a number of separate rollers and frameworks to be seen. In spite of the assertion made by Sir Jasper in London, I am in hopes of getting the Paris contract.—With grateful recollections of the kindness you shewed me when I was in Utrecht, I remain sincerely yours . . .

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[1] Uhlhorn was the inventor of a Mint press and at a later date the founder of the Grevenbroich Engine Works.

Essen, 21.9.1843.

Krupp *to* Sargant Brothers,
Birmingham.[1]

Gentlemen,

According to our agreement I send you this very-day by the interposition of Mrs.[2] Kalckhoff & Brinkmann at Duisburg in 1 packet in linnen marked F.K.Nr 984 B^{to} 16 lb two forged gun-barrels of cast steel, which it will please you to[3] submit to severe essays and comparisons to gun-barrels of iron, especially with regard to the solidity of the material and to the consequence of the greater purity and polish of the soul.[4] By order of more than 10,000 pieces I can make they proportionally to their weight at ten to twelve shillings a piece and by greater orders at a lower rate. Meanwhile I expect as soon as possible a detailed notice of the results.

Essen, 23.11.1843.

Krupp *to* D. Uhlhorn, Grevenbroich.

Some days ago I was informed by Herr Kallé[5] that the President of the Mint had written to you that the 24 dies, about whose enclosure to Paris I recently asked you, can go at once with the *virole brisée*. I at once sent off to you the case, as per enclosed, intending to write to you within a day or two.—I am most surprised at the contents of your favour of 21st inst., which has just arrived. My brother wrote to me from Paris that you had expressed your readiness to recommend our dies by sending samples of them to all the Mints with your consignments of machines. You were good enough to give me the same assurance in London, in Paris you confirmed the results of the performances of my dies which had become known to you elsewhere, and consequently I ventured to presume in regard to the enclosure of these dies to Paris. The fact that you now, however, should have written to M. Persil that you are not in agreement with the complete manufacture of the dies here, cannot, as you will be convinced, in view of the weight which your judgment carries there, but rob my products of the good repute which you voluntarily offered to support everywhere. . . . In the error which has perhaps been made on our side, neither my brother nor I have the smallest part, yet I now see my prospects of a very considerable business in dies with the Mints (to which I have a growing right) seriously disturbed, and perhaps destroyed, by your prejudicial statement to M. Persil. I thought that we were on a most friendly footing. From your letter to M. Persil I can only infer the very opposite of this. How can an immaterial and inconsequential misunderstanding, in which I had no part, nor even any knowledge of it, constitute a reason for withdrawing the employment of your good offices (the expression of your own conviction), and for thereby throwing a doubtful and injurious light on the matter ! I have only too good reason, knowing your really friendly spirit, to be quite sure that the result which will follow is not actually intended by you, but I cannot refrain from frankly portraying the impression which the contents of your favour have made upon me, and the consequences which will unfortunately ensue in my relations with the Mints. . . .

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[1] Written in English by Krupp.

[2] i.e., Messrs.

[3] i.e., will you please.

[4] This must have startled Sargant Brothers if they were unaware that the German word meaning " soul " also means the bore of a gun.—Translator.

[5] Kallé was the Paris representative of the firm of Krupp.

I present my friendly compliments, with my usual esteem. . . .

Essen, 22.12.1843.

KRUPP *to* ALEXANDER SCHÖLLER,
VIENNA.

. . . About the nickel, I am waiting for information from Berlin from Herr Henniger, who founded the first Berlin factory ; it would be best, if it could be done, to procure the raw material (to yield the purest possible nickel) from Austria or Hungary, and to prepare the nickel ourselves. The Hungarian, however, is said to be to some extent not so pure, and, for spoons at any rate, we can only use that which yields the most tenacious metal, although there is another good quality which can be used, at any rate partially, for trays. The English obtain their raw materials from abroad—a good deal from Hungary—and prepare them in England.

Herr Ahrens[1] knows of course how to prepare nickel. Ought we not to be able, near the property of Herr Gerstdorf, the Aulic Councillor, or by negotiation with him, to get a supply of ore which would cover our requirements for a long time, start by testing the ore on a small scale and then ourselves make a suitable plant for extracting the nickel? I have been of the opinion that Herr Gerstdorf had no lack of ore, but that it was only a case for greater activity in production. There may be great wealth of nickel ore still undiscovered ; the English are investigating everywhere, and it might perhaps pay at some time to send someone out to search. Of course the undertaking would be costly, as it would mean going where, so far as we know, no one has gone for that purpose, perhaps into the depths of Russia or into Turkey. In Sicily and Corsica there are, if I am not mistaken, mines of various kinds, but I have no special knowledge of them.—With your wide connexions, you will perhaps have opportunities of making enquiries here and there, to find out whether what is produced does not suggest the presence of nickel as well. . . .

Essen, 1.3.1844.

KRUPP *to the* WAR MINISTER, VON BOYEN,
BERLIN.

Your Excellency,

I have the honour most obediently to submit the following.

Having ascertained the most essential properties which must be possessed by a material to be employed for making ordnance, I have been occupied with experimenting to see whether, instead of wrought iron for musket-barrels and bronze for cannon, one single material suitable for both purposes can be produced.

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[1] Albrecht Ahrens, an engineer, engaged in connexion with the spoon factory which Krupp and Schöller were starting at Berndorf, near Vienna.—Translator.

I have succeeded in making a crucible steel which, combining the properties of strength, purity, and ductility, possesses them in a higher degree than any other metal, and in manufacturing therefrom musket-barrels, with muzzles completed, from one solid piece, without a weld. Cannon also can be forged therefrom, but this would necessitate further plant, which could not be provided until there was a certainty of the suitability of such guns.

To provide some demonstration of the properties of the material in question, I am taking the liberty of forwarding to your Excellency to-day by post :

A musket-barrel, which has been forged as stated above, and then bent by hammering when cold. It is possible for it to be again straightened while cold, without breaking. A similar one has been examined at the Royal Artillery Workshop at Deutz ; I take the liberty of enclosing, for the favour of comparison, the opinion which I have received from the Officer in Charge, Captain Unger.

The second drilled barrel has been completed in the Royal Musket Factory at Saarn, and shots fired with it. As a more stringent test of the strength of the material, it was filed down to half the regulation thickness of metal and the usual test charge raised to 3 oz.[1] of powder. At the conclusion, the barrel shewed local expansions, but was not fractured.

The thickness of the material might therefore be reduced to allow of an important saving in weight, if this is not inadmissible for other reasons.

Your Excellency will judge from these results whether my submission is worthy of attention. I have considered it my duty to bring the matter to the knowledge of your Excellency, and to add the assurance of my readiness to make further experiments or supplies for trial in case you should require them.[2]

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[1] Actually 6 " Loth." The Loth was $\frac{1}{32}$ of a Prussian pound, which weighed (before 1858) about $\frac{1}{2}$ oz. more than the English pound avoirdupois.—Translator.

[2] The War Minister's reply, dated 23.3.1844, read : " In reply to the offer contained in your communication addressed to me under date of 1st inst., you are informed that no use can be made thereof as regards the production of musket-barrels, since the present manner of manufacturing these, and the

Probably Berlin, 3.5.1844.

KRUPP *to the* MINISTRY OF WAR,
BERLIN.

To the High Royal Ministry of War,
General War Department, Berlin.

I have the honour, in reply to your honoured communication of 22nd ulto., most respectfully to submit, in what follows, the plant costs which would be incurred for the production of a crucible-steel forged gun of 6 lb. calibre, and to add the necessary explanations. The material which I contemplate using for guns is distinguished from ordinary crucible steel by its smaller content of carbon ; it is therefore comparatively softer and more ductile, but on the other hand so much the more difficult of fusion.

It is melted in crucibles, poured into metallic moulds, and then, like all crucible steel, forged under the hammer. The raw casting is a compact-grained body, all impurity and sullage rising to the top. The mass has neither, in common with wrought iron, the faults of inner impurity and unsound places, nor, in common with cast iron, those of brittleness and porosity. Pieces of my hard crucible steel, up to a diameter of 8 inches, have for many years been produced here for other purposes, particularly for rolls for Mints, and most of these establishments, including that in Berlin, are aware from experience of the extraordinary strength of this material.—

The variety now intended for ordnance is materially more tenacious than that mentioned. Barrels for military muskets and fowling-pieces, made from it, could not be burst : breastplates 1⅜ lines[1] thick, when fired at with ball cartridge at 100, 50, and 30 paces distance, have remained uninjured

nature of the barrels so produced, at a cost not inconsiderably less, meets all reasonable requirements and leaves hardly anything to be desired.

"To what extent, on the other hand, it might be advisable to take into consideration the production of cannon from crucible steel, must be the subject of further deliberation, and a further communication will be made to you in due course by the General War Department."

The later quotation of this reply—from memory, and consequently inaccurate—by Alfred Krupp in speeches and writings gave rise to various legends.

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[1] See note on page 62.

except for an indentation, where iron ones of twice the thickness have been shot through. . . .

For the complete forging of a gun of 6 lb. calibre, a special hammer plant would be necessary, with a motive power of 40 to 45 horse-power for a hammer of 15,000 lbs. weight of special design and with an effective blow such as no existing hammer possesses. . . . For the complete forging of a 3 pounder gun, the power of my steam-engine would suffice. The movement of my heaviest hammer, which strikes 120 blows per minute, is, however, too rapid to allow of the corresponding turning over of the heavy body, and for the forging of such a gun it would still be necessary to apply a hammer of 10,000 lbs. weight, striking only 40 blows per minute. I have space for this, but the cost of the iron shafts, foundations, wheels, and flywheels would amount to 6,500—7,000 thalers,[1] and 8 to 10 more melting-furnaces would be required, which, with the necessary roofing, would cost 4,000 thalers.[2]

Such plant cannot be constructed until the superiority of the material in all the essential points to which regard must be had in utilizing it for guns has been established, and a guarantee is secured that the plant will be kept properly employed on orders. My most obedient proposal is, then, that the costly experiments should be preceded by one which, without being adequate for the assessment of the efficiency of the larger guns, would still provide some material to that end. Within at most a couple of weeks I should be able to supply a small gun of half the proper size of a 6 lb. calibre, forged complete. From the behaviour of this during boring and turning in a Royal Gun Factory, and by overcharging it with iron balls (say in comparison with similar iron and bronze guns), the usefulness or the purposelessness of further and more costly experiments might then be deduced with some assurance. For absolute certainty as to the strength of the mass, a further boring-out of the tube, in stages, and a stiffening-up of the charge with balls of corresponding diameter, continuing this to bursting-point, might then be of service. . . .

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[1] £975 to £1,050.

[2] £600.

Essen, 3.8.1844.

KRUPP *to* PETER BRÜNINGHAUS,
BRÜNINGHAUSEN.

Owing to other engagements, I cannot come to Witten to-morrow, and I have only been able to inform you of this to-day. As it is difficult to pick a free day in advance, I will now see whether I can come to you one day very soon, if you should not previously be in our neighbourhood.

Meanwhile I have two important questions, which you can perhaps answer in writing. Is it safe for the immediate future to reckon on your always receiving one and the same quality of ore, from which the best quality of Osemund can be produced?—There is no profit in crucible steel in bars, and that has been an additional reason for occupying myself solely with supplying finished steel products. It is now, however, possible that production will have to be greatly extended on account of a newly-discovered and profitable use of crucible steel of a special quality; hence the present question. . . .

Only scanty fulfilment had come of the hope of a richer harvest from the hard work on the Berndorf spoon-factory, the capital brought into the business by Sölling, the technical assistance of Krupp's cousin Ascherfeld and of his now grown-up brother Fritz, and the numerous newly-tried productions. The second half of the 'forties moved more and more plainly towards a great economic set-back, which the two " famine years," '46 and '47, accentuated, and which only worked itself out fully in the revolution of 1848. Years of travelling brought Alfred and his brother Hermann a few considerable contracts, but not an adequate return. The Berlin Industrial Exhibition of 1844 brought Krupp the gold medal but few orders, and in his private capacity it brought vexations which enriched his experience of the worse side of humanity. He made great efforts to exploit his steel to the utmost for weapons of defence and offence, at first with next to no result; he himself saw the significance of this branch of manufacture, and clearly foresaw the value of crucible steel for indestructible weapons, but the experts were far from sharing his conviction, and he had a foreboding from afar of the severity of his future contests with " the profession," on whom he must force his convictions before his ideas could come to life and bear fruit. Almost his sole support during these years, and in the friction with his partner Sölling, was his consciousness of being in the right, and that he was fighting, not for his own advantage, but for his undertaking and for all employed in it. The year 1848 put him for the first time to the test as a socially-minded man. He kept his workmen at their employment, and earned their food for them, even though he himself went short. At the worst time, the Works were saved by a couple of contracts for which he had struggled for years, a couple of spoon-factories to be set up in Berlin and Petersburg, which provided ample work for months. With this he carried his undertaking over into the epoch of the 'fifties, the age of railways.

Essen, 24.8.1844.

KRUPP *to the* CENTRAL COMMITTEE *of the*
INDUSTRIAL EXHIBITION, BERLIN.

. . . The setting-up of these articles, and especially of the highly-polished rolls, requires great care, and I beg to request sanction for Herr Aug. Mannory, of Berlin, to attend to this, and to their daily inspection for protection from rust. The value of my productions is not to be judged by their appearance, but by use, and can be demonstrated at the Exhibition only by the evidence of customers, as to which I still await the most important written testimony, which I shall then venture to submit. If it is agreeable to the honourable Central Committee, I shall be prepared later to submit also the product of a machine of my invention which has recently come into use for large scale manufacture, and which, by means of roller pressure, converts sheets of raw silver, German silver, or any other ductile metal, into spoons and forks of any shape and with any usual ornamentation, cutting them out flat, and stamping them sharply and cleanly.—

I would further supply a test sheet of the same material as that of which the musket-barrels submitted consist. Experiments already conducted give reason to expect that steam-boilers made of this material need only be $\frac{1}{3}$ of the usual thickness of iron ones. The test sheet is polished, bent double in a cold state, and hammered flat together in one corner, without shewing the least injury. Any desired sheet is at the disposal of a member of the respected Central Committee, free of charge, for the purpose of experimenting in its use. As soon as the invention has made good, I shall lay down the further plant necessary for supplying such plates in any size. It is possible to produce them as large as 2,000 lbs. each. This is the same material as that from which the lighter ball-proof breastplates are made, the purity of which was demonstrated in the test breastplates already completed therefrom by Herr Jäger of Elberfeld.

Essen, 8.9.1844.

KRUPP *to* BURGOMASTER PFEIFFER, ESSEN.

Your Worship,

I take the liberty of requesting your kind perusal of the enclosed copy, and will then explain the desire which dictates the present letter.—You have a friend on the Committee of the Industrial Exhibition. Would it not be possible to find out through him, privately in the first place, what Herr Wm. Jäger[1] has stated in his report to the Committee regarding the breastplates ?—

I do not want to accuse him openly of falsehood, if he still satisfies my demands—the continuance of friendly relations with him is desirable for me—but on no account shall he adorn himself with stolen feathers. Earlier direct statements made by me to the Committee, to the War Minister, and to the military authorities, might, if I do not interfere, be imputed to me as falsehoods, all the more since Herr Jäger, through his earlier connexion with, and supplies to, the Ministry, already possesses their confidence, and the assertion that the material of the breastplates is his invention and his production seems to have found credence.

This matter is of the utmost importance to my Works. The material in question is that from which I propose in future to manufacture muskets and cannon, the supply of which to the various Powers I hope to secure. So first of all I must take steps to assure myself a firm footing in their favour and their belief and confidence in my productions. I hope that your Worship will not refuse me your mediation. . . .

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[1] The manufacturer Wilhelm Jäger of Elberfeld—with whom A. Krupp was discussing the project of a spoon-factory to be jointly established—had, at the Berlin Industrial Exhibition, described breastplates of Krupp's crucible steel as his own sole production.

Essen, 12.10.1844.

KRUPP *to* FRITZ SÖLLING, ELBERFELD.

I think you are fortunate to have got into your winter quarters. The object of these lines is to amplify verbal communications relative to the business which was broken off in Elberfeld, seeing that the shortness of our time together prevented the matter being gone into fully. You know the reasons which I put before Herr J., to persuade him to agree to the preferable course of erecting the factory here. Since then, a site has been offered more cheaply; this would now perhaps cost only 5,000 thalers[1] for 200 □′, and the difference in the cost of the buildings and sites would now perhaps only amount to from 8 to 10,000 thalers. . . . That is worth talking about. It is not enough that Messrs. v. d. Heydt[2] are providing the money ; that has nothing to do with the matter. It is a capital sum lost for ever. In consideration of the period of joint management and of the ensuing dissolution of partnership, I must reckon just as if we bore the cost of building out of our own means.—This point is important enough, but I will simply set it entirely aside, to make way for more cogent considerations. . . .

In wages we save here at least 3,000 and perhaps 4,000 or 5,000 thalers, but let us put everything at the very lowest, and bear in mind that the output can be doubled or trebled. . . . If I must give in Elberfeld 12½ silver groschen[3] a day to the workman whom I get here for a daily average of 10 s.g. (and for that I get none but sound workmen, who could take a weaver under each arm and run upstairs with them), this alone makes a difference of 3–4,000 thalers on the estimated wages bill of 16,000 thalers. If I am asked for how little a day a man can be had, I can collect them here *en masse* for 7, 8, and 9 s.g. a day. 9 s.g. is the proper pay here, but we give everyone 1 s.g. extra, to make sure of keeping them. At Sterkerath they have a crowd at 8 s.g. a day, as I found out a couple of days ago. Well, there was no agreeing on this point in Elberfeld ; the lowest wages paid there were compared with my highest, as though the question were, what is the lowest price at which riff-raff can be got ? The question is, however, " what must a man of equal capabilities earn there, in order to be able to live as well as here, and what must he earn to be able to live well, to remain loyal to the factory which gives him his living, and not to run off at once at any opportunity of getting more? "—It is on this basis that our men here are employed at 10 s.g., and the question is, whether I can have this guarantee there for 14 to 15 s.g. a day.—The purpose of my argument must not be misunderstood ;—it is not, to have cheap folk ; no ! they are to earn extraordinarily good wages compared with other workmen in the same place ; they are to have more benefit from their pay, and to be more bound to the factory by inclination and interest, through the circumstance that the factory is in the cheaper district. The factory needs people who are attracted to itself ; apprentices will be trained up as master workmen, each in his trade. If they earn 1-2 s.g. a day more than other workmen, they will never leave the factory, inasmuch as, outside the knowledge they have acquired here, which has a special value for this type of production alone, they understand nothing which would entitle them elsewhere to anything more than ordinary workmen's pay.—That is how things stand here in our Works, and for that reason there are no other Works where so large a proportion of good, picked men have been got together.—How can there be any comparison between these men and the class of workmen who are here to-day, there to-morrow, men who are discharged from factories when work fails, and so on ?—In short, my contentions were not admitted, because they were set on putting up the factory at Elberfeld. This was all Herr J.'s doing, and he had to strain every nerve to secure it. The course of events makes the reasons clear.

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[1] £750.

[2] The banking house of von der Heydt, Kersten & Sons, of Elberfeld, was behind Jäger. Krupp's objections to the scheme were the cause of bad feeling between him and these bankers for many years.

[3] 1*s.* 3*d.*

Now I must go further back, in order to tell you all about my relations with Herr J., to explain my attitude towards him. After he had tested my material for breastplates, he rejected his own for the future, and we came to the agreement about which you know. I took this opportunity to shew him the rolled spoons and forks, not with the object of putting a business proposal before him, but just to hear his opinion of the matter. His first remark was that " if he had not had his business, and had also had the necessary capital, he would at once have been prepared to take up the matter." He had soon got to the point of considering the question of attracting capitalists. Meanwhile he wanted to know my terms. I gave him them ; he wanted to discuss them ; I broke it off, and was only inclined to return to the subject when Herr J. wrote that Messrs. v. d. Heydt were the capitalists who were interested in the matter. The factory was to be erected at Elberfeld, Herr J. to attend to the business management, in short, there was no question of the negotiations being broken off again, for the hesitation which I formerly felt at contracting with Herr J. disappeared when Messrs. v. d. Heydt came into them, guaranteed the capital, and led me to suppose that I could count on their accepting responsibility for proper management by Herr J. Now the practical details could be discussed—the purchase of the requisite land and the building plan.

Herr J.'s first proposal was to hand over his vegetable garden behind his house—if I am not mistaken, he put it at 4–5,000 thalers ;—but it was too small.—He would have liked to stroll over there morning and evening in his slippers, and remarked that, although his sons would in a couple of years be so well initiated into his present factory that they would be able to manage it themselves, he must still be there for the present to guide them. His factory, the improvement of patterns, negotiations and correspondence with public bodies, and the like, will, however, be certain always to occupy him, as at present, and he will not leave this to his sons.

The second proposal was to take over the garden opposite his house, at, I believe, 1,500 thalers, and that of Herr v. d. Beck, adjoining it, at about 3,000 thalers, to carry away this huge hill and make the building site of it, so that again the factory might be in his vicinity, on the other side of the road. . . . I pointed out to him that this site was not large enough, and that, moreover, it was unnecessary to sacrifice so much. —It might suit him to rent the motive power and the premises for his grinding-shop, but I would never agree to hire out engine-power, for several reasons, which I explained to him. In all his proposals he obviously had only his private interests in view, and his last proposal made me distrustful of him. The Company was to buy his tumble-down sheds from him at an enormous price, and his steam-engine, because the manufacture of Britannia-ware no longer brings him in anything, and this part of his factory is no longer of any use. . . . Is that a man, now, to whom I should entirely confide our interests ?—. . . In addition, the news has just come from Vienna that Hermann will probably remain at the Berndorf factory and that Herr Ahrens will in future exploit nickel mines and manufacture nickel there, and thus the supports on which I had previously counted would be gone, and I should have to neglect either the establishment at Elberfeld or our Works.

The gentlemen took my reasons for pretexts. I told them nothing but the truth : but not all of it. How could I say to them what I am here writing to you ? Herr J. is related to them, and in good odour with them. They may have reason for this ; but I have reason for sticking to my opinion. I do not trust him. A fresh reason is his own latest contradiction. He declared to me that the 3 breastplates which were fired at in Düsseldorf had quite failed to give satisfaction, that the material had been stated by the Prince to be unreliable, that a French breastplate, made like his previous material, had given complete satisfaction. . . . While I was still in Elberfeld, however, there came a letter from Paris, with the intimation that the breastplate supplied had given every satisfaction there, with the lightest weight,—that prices were wanted as quickly as possible.—I sent him the whole letter to read. What did he do ?—He brought it back himself, and declared to me in the end that the Prince at Düsseldorf was entirely in favour of his offer in Berlin to supply this breastplate ! Is not that a contradiction ? Can that be true of the Prince, if he had really previously given the opinion quoted to me ?—

Thus one thing has been added to another, so that I am bound to be prejudiced against any close connexion with Herr J., and especially against such dependence on him : and we may congratulate ourselves. . . .

If the position of affairs is such that you think it would be useful to take advantage of an opportunity of this kind to put Messrs. v. d. Heydt in possession of every syllable of this, I leave it to your discretion. The truth and a just and fair judgment must come before questions of interest—even if in the end what I have, out of compunction, told nobody, should become known to Herr J. in turn.

I felt I could make no better use of this afternoon than to send you this full account. Put it to the use for which it is intended, if an opportunity offers. I remain, cordially yours . . .

Berlin, Hotel de Russie,
5.4.1845.

KRUPP *to the* MINISTER VON ROTHER,
HEAD OF THE PRUSSIAN STATE BANK.

Your Excellency

was so kind as to permit me to approach you again in writing with the request which I had the honour to put forward verbally ; acknowledging with profound thanks this proof of your Excellency's goodwill, I venture most obediently to request some consideration of the following representations.

The French Chamber of Deputies is on the point of discussing changes in the French Mints, and, in particular, of deciding on the erection of a Mint rolling-mill in Paris.

Rolling-mills are the principal production of my Works, and accordingly I intend to endeavour to secure the order for the supply of this machine to the Mint, and I regard the maturing of this business, which in the course of time may well grow to several million francs, not only as highly important for my country and for myself, but also as a point of honour and as a powerful lever for the diffusion and the reputation of my productions.

My manufactures have already penetrated into France and—as in all countries where they are already known—have met with full appreciation and have ousted other similar articles. In view of this, and of the fact that the Head of the Mint Commission has already invited me to come to Paris to discuss my business and to submit designs of my machines, I have no real need of any further introduction in France ; yet it appears to me that to have one from a high quarter is very desirable and important, inasmuch as there is at stake, as I have already stated, a considerable amount of money, and it would moreover have the effect of facilitating my negotiations, and of engendering more rapidly the personal confidence on which I must rely on arrival there.

What, however, would make such a recommendation particularly important and useful would be its being addressed specially, and in a somewhat pressing manner, to Herr von Rothschild, for he is, as I have privately learned, secretly taking part in the technical management of the Mint, so that his voice would doubtless carry some weight.

Moreover, I have been for some time in negotiation with the French Ministry of War about supplies of a new material, solely produced by my Works, which, in consequence of its acknowledged properties, is destined to be used in future in preference to anything else for breastplates, muskets, and other weapons of war. If the fulfilment of my hopes in regard to this were promoted by Herr v. Rothschild's influence, none but the most fortunate consequences could result for my Works.

I have not the honour to be well-known to your Excellency, and cannot therefore venture to hope that my most obedient request

> that your Excellency may be pleased to grant me your kind support by means of such an introduction to Herr von Rothschild as may appear suitable to the facts explained above

will be granted until after your Excellency has been convinced that I am not unworthy of your intercession. . . .

Essen, 22.11.1845.

KRUPP *to* FRITZ SÖLLING, COLOGNE.

The reply to your two welcome letters has been waiting for the trial with the silver-like metal[1] which Adalbert Ascherfeld[2] has been carrying out.

The fragment was white when melted ; when cleaned, it was not so white as the best German silver. When scraped on a black stone, and the scraping wetted with *aqua fortis*, which dissolves all but the precious metals and silver as well, the scraping of German silver dissolved at once, while that of this metal was longer in dissolving, and very like silver in this respect and also as regards its strength. A. Ascherfeld was therefore at once of the opinion that there must be silver in it, went to the town with it, and refined a bit of it at home in the cupel. The base metal separated off, and the pure silver remained behind. It appeared that about half of the alloy consisted of fine silver ; we can therefore estimate that the silver content alone, in a quality equal to the sample, costs 14 silver groschen[3] per half ounce, and it can only be produced more cheaply at the expense of the silver content. . . . It would be possible to be deceived by the scraping on the stone, if one believed that the seller was giving one silver. That would be a wretched piece of trickery. . . . So let the good man know that we cannot make any use of his invention, and do not trouble to give him any further explanation.

A letter has arrived to-day from Paris, in which the Director[4] agrees without further ado to our sending the machines, and also to their arriving a couple of weeks later, since they cannot be set up before the middle of January. So we have nothing to worry about.—And a letter has just come from the War Office in Berlin, informing us that the question of having 100 breastplates made is under consideration, and asking us to state the conditions under which we are prepared to undertake the work. . . . Mention is made of Herr Jäger of Elberfeld as a competitor. I am going to answer this letter at once, enclosing all the evidence from which it will be apparent how J. has lied hitherto. . . .

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[1] This was an alloy, similar to German silver, and intended for use in the manufacture of spoons.

[2] Krupp's cousin, Ascherfeld, had accepted an appointment at the Works in January.

[3] About 1*s*. 5*d*.

[4] The Director of the Mint.

I will close for to-day, with most cordial greetings,

Your sincere friend . . .

Essen, 18.2.1846.

KRUPP *to* FRITZ SÖLLING, COLOGNE.

Dear Fritz,

Here is my report of the trip to Vienna, and of the digression to Berlin on my return.

I arrived at Vienna 24 hours late, in consequence of the collapse of a railway bridge between Prague and Vienna, and went the same evening to see Herr Schoeller at the office ; he was surprised at my arrival, and seemed very pleased at it. He wanted to go to the factory with me the very next day, but I suggested to him that it would be soon enough if he fixed it for the day after, as I should spend the first day looking at the details, which were familiar to him, so that he could use the day to make preparations for thoroughly discussing the factory and business with me on the following day. . . .

I have had the great pleasure of convincing myself that all the different cutting and rolling machines supplied from here have, from the first day, worked as perfectly as though they had been running for years. . . . The whole mechanical process—the part which is really our affair—goes in such a way that we need nothing more for our credit and Herr Schoeller's confidence in us. . . .

Prices have on the whole been kept fairly high, and are only to be reduced if necessary in face of our competitors—if they have to be entirely suppressed in order to sell the bulk of our production. At present the Vienna factories may as well go on working, and almost as much as previously. They make bad metal and still sell it, supported by the cheapness which is now possible. By all means let them have work, so long as we can sell as much as we make, and at suitable prices, which bring in a profit. It is not our object to ruin the others, but only to earn money, as much as possible. We must therefore in our own interest always keep the prices high, but not so high that the goods do not remain cheap at the price, though turnover and profit must remain in a proper relation to one another.

The manufacture of silver goods is not yet in full swing. There is still a good deal in the way, which can be removed only by time and trouble. Strangely enough, the Viennese stick tight to the old shape of their forks and spoons, and refuse to take the imitations of Paris fashions with which we hoped to score a success. The Austrian likes to take a respectable mouthful, and on this account some people consider the spoons too small. The silver shops in Vienna, which must be our principal customers, are strongly opposed to buying from us. They have, as it is, their own workmen, whom they oppress to an extraordinary degree, and who put up with it. Then some of them are afraid that, if they once helped to secure the acceptance of our productions, the business might in the end be taken entirely out of their hands. . . .

A great evil in Austria, which not only makes export impossible, but also restricts the home demand, lies in the fact that every half ounce of worked silver pays 6 crowns duty to the State, whereas it often costs only 3 crowns. You can imagine that, in such circumstances, when the price is 9 crowns instead of 3, nobody has spoons and forks made unless he absolutely needs them ; for that very reason, the demand and the orders would be bound to be considerable if this excise were removed. Herr Schoeller proposed this, and found out that the President,[1] Baron Kübeck, was inclined to favour the abolition of the item on the ground that it had hitherto brought nothing in to the State. At Herr Schoeller's wish, I too went and saw Kübeck, to remind him again of the matter, and I heard the same from him, and also that the new law was being drafted. Kübeck is the man who previously helped me to my rights against the Mint,[2] so that this was just the opportunity for me to kill two birds with one stone. I brought myself to his recollection with thanks on account of the past, and told him incidentally of the supplies to Utrecht and Paris, and that I would call again later with further information. Told him further something sketchy about weapons of war, which also interested him ; in short, for the present I had attained my object in being recalled to his memory, in order to be all the better able to count upon him at a later date in case of need. . . .

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[1] Of the Exchequer. [2] See letters of 16.7.1842 and 2.8.1842, pages 69-73.

In Berlin, I visited a nickel merchant recommended by me last year, who has served the factory excellently, and I got information, both from him and about him, to send to Vienna. I visited Privy Councillor von Viebahn and other gentlemen of the Finance Ministry and Industrial Association, who are to support a petition that the Ministry may present us with a work, a collection of copper-plate engravings, for exhibition to the students of design ; it costs a hundred or two, and is not to be bought. At the War Office, I called on the Head of the General Department, General v. Reyher, on Colonel v. Linger and in addition on a couple of majors and a couple of captains, whom I have met previously, and who all have a voice in matters. In the other division, the Supply Department, I was with Lieutenant-Colonel v. Doering, who sent us breastplate samples for test. It was a very good thing that I went. I heard a lot. They too heard with great approval that the gun is now in hand and will be sent in. I was assured that it should be tested immediately. The loophole-shutter failed the test, but they did not lay the blame on us, but on the finishing at the other place, being convinced that it was not properly treated.—We could not wish the Department more interested—money, that is another question.— . . .

Things are not going well with our warehouse in Berlin. A curious thing is the cause of this. It has turned out that the water which is used for hardening, does not harden so hard in Berlin as elsewhere. Thus we have had to supply the Mint with dies of harder steel than any other Mint hitherto, and many people have complained of our steel that they could not get it hard, though we bring the same variety of steel to the highest pitch of hardness here by the same method.

Our agent had hesitated to report the complaints to us from an ill-advised apprehension that we might be too much offended. On this account, too, it was a very good thing that I went to Berlin, as otherwise this fact, to which so little importance was being attached, might not have come to light. With the rolling-mills, too, things are not yet going quite right ; none of the goldsmiths there have any enterprise, and there is a Jew who has had a number of rolls made of bad material and is trying to sell them for next to nothing. This has produced a temporary stagnation, and is a reason why we should send from Berlin all of this type of article which is ordered direct from us and is in stock there ; and moreover, that we should only leave a few things permanently with the agent, and despatch the remainder to Russia, as soon as this looks worth while and navigation to Petersburg is open. . . .

The melting-house is nearly enough ready with some of its furnaces for us to be able shortly to make a melting test ; the draught seems unnecessarily strong. If that proves to be the case, then a melting-house with 60 furnaces can be laid out as cheaply as ours with 14. If, that is to say, a single high chimney is sufficient. Friedrich has made a very important invention, which will, in future, give us great certainty and economy in producing large masses, and which is of enormous value to the whole process of making crucible steel. There is in the ingots of different diameters—a tenth in the small ones, nearly half as much in the large—the so-called "head," which is not compact, and which must mostly be remelted as raw material. Friedrich seems to have entirely and definitely removed this great loss, which has been such a burden on production, and if this continues to hold good, as it has done beyond doubt up to now after repeated experiments, then we have a big new lead over all our respected rivals. Friedrich and Adalbert, the latter of whom has the crucible department, have brought the crucibles, at which we have worked so hard for so many years, to a high pitch of reliability, and they are going so thoroughly into the question that I have no doubt that here too plenty more advantages will be gained. Now, when no one any longer looks after everything and everyone has his speciality, it is possible in one department or another to pitch with much greater certainty and deliberation on various advantages which formerly were overlooked, or of which there was no time to think.

I will now close the report, which is bound in turn to raise questions which will probably give me occasion to write another 20 pages.

On Wednesday morning I expect Bremme from Unna,[1] to discuss coats of arms and mottoes for a long time ahead ; he probably will not go away again until Thursday afternoon. After that, however, I shall, I expect, soon come, only I do not know what day. The carnival is nothing to me ; in any case, however, I shall stay a day with you before going to Paris.

Essen, 31.3.1846.

KRUPP *to* FRITZ SÖLLING, COLOGNE.

Not to lose any more time, I am sending you these lines by Herr Gantesweiler,[2] as I cannot come myself, partly because I still have a bad cold and can scarcely speak, partly because there are many things to see to—including the firing at breast-plates to-morrow.—All explanations about the balance-sheet he can give you better than I can, since he has had it in hand for weeks and knows every item. So in the first place, when you have looked through the balance-sheet, please talk over with him everything of which further explanation is necessary. . . .

As to the money question, I really thought that, after such detailed elucidations, I should to-day have received an account of what has been done. I can only again impress upon you the contents of all my letters on this subject and the consequences of further delay. I cannot say where you might get the money ; I should only like to be in your circumstances, to be able to assure myself at once of any requisite sum.

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[1] Bremme was for long the engraver of Krupp's spoon-rolls.

[2] Gantesweiler was appointed in 1844 as traveller and chief clerk. At first he was almost continuously travelling, but later took charge of the business side of the Works.—Translator.

I must be able to count at any time on the 25 thousand thalers,[1] if the business needs them ; now is the moment, although earlier than we thought. Whatever this capital costs you in interest above 4½% for 6 months, the business can repay you at the end of that period, when your bonds can be redeemed ; so that in this way you will suffer no loss, but the business must have the money. It will not do at all a little later, at the rate of progress of the Works up to the present. The business has a small capital on which it must pay interest and which must be paid off ; it must be independent of the bankers ; therefore, and in the certainty of the increase of business, we are leaving everything that we have in it, and we shall try to realize all the private means of my mother, and bring it in, even if it is only 10,000 thalers. We have now 37,000 in the business, over and above the 40,000 capital brought in, and you agreed that our additional contributions shall be equal up to 25,000 thalers.[2] Surely you cannot now have any further doubt ; nowhere else can your money bring you in more, apart from the interest, I am quite sure. Lastly, you are also protected against loss by my declaration that the interest over 4½%, which may be charged you, in addition to commission, for 6 months, until you have your own capital, shall be recouped to you by the business.—I now expect news of your success by Herr Gantesweiler.

Utrecht, 30.5.1846.

KRUPP *to* FRITZ SÖLLING, COLOGNE.

Last Friday morning I arrived here from Paris, by noon we were rolling, and continued the work until yesterday, completing in one day 1,600 kg. of silver. Everything went splendidly without accident, and this morning the Director came to see me at my lodgings, for me to make out the proxy for the receipt of the invoice amount, which he will then hand over to Herr Th. Sölling at Rotterdam. Another 6 weeks may pass before the draft from the Finance Ministry follows, as the account must also go through the Royal Finance Board and other offices. No interest will be paid. It is only to-day that I am answering your friendly note of 20th, because I have not been able to take up a pen since receiving it. I shall stay here over the two holidays, to attend to arrears of correspondence, and then I go via Brussels to England, as the Master of the Brussels Mint has applied to the Treasury for approval of a grant of 80,000 fr. for the improvement of the Mint plant ; he has already seen our machines in Paris and here, and, according to the statements of the gentlemen here, is very enthusiastic about them. I can expect the best recommendation from the gentlemen here, as well as from M. Dierichs of Paris ; so I will see what can be done in Brussels ; I shall stay there at the Hôtel de Braband, in case you are thinking of writing anything to me there. If it comes to negotiations, I shall probably stay some days ; if, however, the Master of the Mint prefers to come here to see the machine, I shall perhaps finish there in one day and then sail as quickly as possible for England, just to see what that offers us.—

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[1] £3,750.

[2] By the agreement of 14th August, 1844, Sölling paid in 50,000 thalers, and undertook to equalize further capital put in by the Krupps, up to 25,000 thalers. His share of profits was 25%, with a minimum of 4½% on his capital, and no liability for losses.—Translator.

London, 23.1.1847.

KRUPP *to* ALEXANDER SCHÖLLER,
VIENNA.

The post will be going as soon as I have got the enclosures ready. I bring these to your notice for the favour of careful examination, and shall be delighted if only a part should lead to some useful result. I have a great deal more to add, which I will save for a later letter, including particulars of a special rolling-machine for spoons, with the design of which I am still occupied, so as to include it in the English patent,[1] not so much in order to use the machine preferentially, as because it is workable and in order to remove the possibility of someone bringing out another system alongside us in England and so becoming a dangerous competitor. I will send you the sketch in due course, and it will then be worth consideration whether we shall now take out a new improvement patent in Austria on this and all the innovations introduced since we took out the patent, including the rolls for coats of arms and mottoes, and so forth, in order to gain a lead over others and to have the main advantages assured to us again for a fresh 15 years, even if the patent for the improvements should expire with the original patent. I do not remember whether we have the cutting edges on the rolls in our original patent ; if this is not the case, we have good ground for taking out a patent and declaring this to be a substantial improvement. Someone else might get to know about it and take out a patent for the edges, relying on the fact that we had not done so, and thus be entitled to compete with us ; assuming always that he succeeded in making the rolls, which is not yet to be feared. It might, however, be possible for him to make difficulties for us. . . .

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[1] The English patent is No. 11353 of 1846, dated 26th February, 1847.—Translator.

Would it not be possible to sell roughly-rolled silver spoons to the leading Hungarian silversmiths at a respectable profit ? I think that, if we sent a finished and a rough specimen to some of the principal people for inspection, since only a few have stamping plant, we might thus, without having to give credit, start a substantial business in that great country of Hungary, where so many rich people live ; it would be ornamental stuff, for we must of course be able to meet the demands of fashionable fops, though we must always try to bring them nearer to the taste of the general public. A respectable size, sufficient in most cases, from which nevertheless something more could be rolled off or cut away if they were wanted smaller.

I have not yet got so far as to put before you the proposal already mentioned, but I look upon all this, and what I have since done, as an introductory step, to make clear its object and value.

London, 18.6.1847.

KRUPP *to the* FIRM.

I am leaving here to-morrow, staying 2 days in Paris and 1 in Brussels, in order to talk with Lyon Allemand and Bonnevie, and shall then see whether I shall bring anyone home with me. I am leaving the further conduct of things here to Mr. Woods, and am sorry to say that the house with which Mr. Woods was last negotiating has declined the proposition.[1] It will, however, come about in one way or another, even if some further time elapses. Everyone sees that the business is a good one. No one raises objections. There are so many other circumstances ; one man at last produced the reason that it would not suit his position to make spoons, a reason which had already been put forward by another. Negotiations have already taken place with five, or rather, offers have been made to them, and the papers handed over for inspection. Before I alter the conditions and so close with someone, a couple of months more will have passed, and I do not want to be answerable for that by myself to Herr Schoeller ; such alterations we can make from home, but Mr. Woods said only to-day that he did not think it at all necessary to alter things and make them more favourable. The question is more one of finding the right man.

Essen, 14.7.1847.

KRUPP *to* RICHTER & HAGDORN, PARIS.[2]

. . . Now I will tell you something fresh, which I have kept back from you until a written settlement was arrived at.

When I reached Brussels from Paris, I went in the evening to A. Bonnevie, 1er *fabricant de cuillière en Belgique* (which, for that matter, does not go for much, in comparison with Parisian manufacturers, as regards *scale* of production, although I must say I have never seen finer stamped work than his). I shewed him the samples and gave him particulars of the machinery and the patent, said I had taken out patents in all countries of importance—including Belgium—in the larger ones for my *own* exploitation, in the smaller ones for *licensing*—both with the object of establishing a general monopoly of the system. Then I offered to let him see the machinery working, and told him that if it satisfied him, and he was of opinion that this system would supersede the old one, I should prefer to make over the patent to him (as an old customer of substance, who has ordered his spoon-stamps from us for the last 15 years). I am now sending you two letters, the second of which arrived to-day. You will see that it soon followed me. After he had seen a couple of German-silver spoons of filleted type and a silver one rolled from the raw material to completion, he did not want to see any more ; within a couple of hours everything was cleared up and settled. He at once ordered the spoon-machine and a set of breaking-down rolls, with dies, for one pattern only as a first step, so as to make as early a beginning as possible. You will notice that he is adopting steam power immediately. His intention is to make not more than 20 doz. a day of the different varieties of German-silver *and silver* ; of the latter he reckons on not more than 5 doz. sets a day.

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[1] The establishment of a spoon factory in England.

[2] Richter & Hagdorn were Kallé's successors in the Paris agency.

The order (as a first supply) is of course only a trifle as regards the amount. . . . It is important only as a proof that a man in the trade needs only to see the process in order to gain the conviction that the old methods cannot stand against it. Bonnevie has a good business, and is a very energetic and capable man ; he saw that, if I handed the matter over to someone else in Belgium, his business would be near its end ; that at once decided him to agree so far, and I believe his preliminary order, *although* of only 13,000 fr., and his immediate introduction of steam, shew sufficiently that he regards the process as perfect. . . .

Essen, 23.10.1847.

KRUPP *to the* WAR MINISTER, VON ROHR,
BERLIN.

Your Excellency,

I take the liberty of begging your kind attention for an object which I have pursued for several years, and your favour in regard thereto, if the matter appears to deserve it.

It concerns the manufacture of weapons from crucible steel, particularly of muskets, rifles, breastplates, loophole-shutters, cannon and the like.

His Excellency the War Minister, Herr von Boyen, to whose post your Excellency has now succeeded, very readily submitted my sample supplies to test.

On 20th Jan. 1845, a sheet 0.20″ thick was fired at with rampart guns, as regards which test an account, dated 27th Febr. 1845, sent to me by the War Office, contains results which confirmed the strength previously shewn by my material in breastplates, and which demonstrated its usefulness for loophole-shutters. I have since supplied the material for two loophole-shutters, and still await information as to the results obtained with this last consignment to the management of the Principal Artillery Workshop on 20th March of this year, and a decision whether I shall be required to make supplies for fortification works.

A very detailed report, from the Royal Firearm Revisal Committee at Potsdam, dated 6th May 1845, regarding experiments, which were undertaken at the establishment there, at the instance of the War Office, with my crucible steel and with musket and rifle barrels produced therefrom, concludes with the following expression of opinion : " The Committee gives it as its opinion with regard to the crucible-steel barrels, as well as the Krupp crucible steel, that nothing better and more excellent is yet in existence, and that equipments of this material promise to last three times as long as at present. As, however, the cost of the general adoption of this material is against it, a good deal would be gained from using it for rifled barrels, in which it offers a greater effectiveness ; for the barrels of the cavalry arms, whereby greater lightness can be attained ; for the inner parts of locks, in order to avoid repairs and increase safety ; for swords, on account of the stability and hardness which it possesses ; for breastplates and loophole-shutters, on account of its ductility."

In view of this and other brilliant results, I hoped, even if the cost of the material has not up to the present permitted its use for muskets, that rifles, ordinary rifled and lighter cavalry barrels made of it might soon be introduced, since the cost-price of the barrels, especially of the rifled ones, can be amply compensated for by the certain success of every specimen in respect to inner cleanness and to standing the firing test. . . .

As long ago as 1844, breastplates of my material referred to above were supplied by Herr Wilh. Jäger of Elberfeld to the War Office for test, and were found entirely satisfactory. I have recently decided to carry out the complete manufacture of these in my Works, under my own supervision, since in the case of a direct test consignment sent to the War Office (Military Supply Department) on 6th July of last year it was proved that a breastplate manufacturer, to whom I supplied my best material for the purpose, so spoiled it that the breastplates lacked resistance, and since my request that the breastplates might be finished in the Royal Musket Factory has been refused. I have therefore pushed on as much as possible with all the arrangements, and now count positively on completing and despatching some breastplates within a fortnight ; I hope the delay has not been so long as to cause dissatisfaction at the War Office. . . .

Lastly, I beg most obediently to refer to the discussion, commenced as early as 1844, regarding the supply of a cannon of the same material. Instead of a solid gun-barrel, which War Office minute of 22nd April 1844 decided to order, I have constructed, under approval given on 24th August of this year, a 3-pounder gun with a completed inner tube of crucible steel and a jacket (still to be completed) of iron, despatched it to the War Office (General War Department), and proposed, in my obedient communication of 24th August, that the further completion of the gun in accordance with the opinion of the experts charged with the matter, particularly the experiment with a new jacket, should be carried out with a tenacious variety of iron. I am in receipt of the agreeable assurance that this experiment shall be carried out quickly and thoroughly, and await an intimation as to when the gun will be so far ready and this test will take place, as I should much like to be present.—

Having now made your Excellency acquainted with the object which I have pursued for years, and which has cost me thousands but borne no fruit as yet, I repeat my most obedient request for your gracious notice and favour for my zealously offered services, if the more exact testing of my material shews me to be deserving of such a privilege.

Essen, apparently November, 1847.

KRUPP *to* FRITZ SÖLLING,
COLOGNE.

I have had so much to tell you about what has happened and is to happen that I have not yet found time for it. I am waiting too until I can write you something pleasant.

I had already fixed the balance for the end of December. I also wanted to delay the settlement of the alteration of the agreement so long, because I do not want to act on my own account, and should like to have Hermann's remarks as well. I should be glad to avoid advance discussions or writing on the subject, because I can employ my time much more usefully, and I believe that later on we shall settle the point at once. I have no reason for concealing my views ; whatever anyone whom we both respect may decide, in case we do not at once come to an understanding, I will subscribe to immediately.

The new steel is being melted daily—still only a little, as we have not many crucibles. The melting goes quite well. The new stock of crucibles is growing fast, and we shall soon be able to use some of them. The new iron from Sweden will perhaps be here in a week. It is paid for. Vollgold and Jürst have not yet replied. It is the latter who wants to erect a plant in Warsaw. He must first come to an agreement with his partner. Schwabe[1] writes from Petersburg that he has made all preliminary arrangements, and only the arrival of the Duke is awaited. He appears confident of success.—I am sending you a copy of a reply from our Minister of War, also a private letter from a clerk in the Ministry, which you will tear up.

I have sent breastplates to Vienna, because Hermann wrote that he had found a man who could introduce them at the Ministry. I have written to Russia about an order for a test. Our chief mining official has been written to and informed of the reduction in the price of crucible steel, with the request that he will bring the prices to the knowledge of all the mining authorities in the country.—

I should like to have Jürst's letter back.—I shall be going to Utrecht at an early date about the arrears of interest of about 700 fr.,—and other small matters which require arranging.

Towards the end of this week we shall be in a position to complete breastplates entirely here and to give them a high polish.

I will send your card to Stockholm, if a letter of thanks from there for services rendered should give me an occasion for a reply ; moreover, we can perhaps make very good use of the house later, if we should obtain more iron from Sweden. In view of the sacrifices we have made, a low commission will then doubtless be charged.

I am still without a horse, although I made a big circuit round the country of Münster last Saturday to look for one.

My kindest regards to your wife.

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[1] Schwabe was the plenipotentiary of the Duke of Leuchtenberg, and was in negotiation with Krupp about the establishment of a spoon factory in Petersburg.

Essen, 2.12.1847.

KRUPP *to* FRITZ SÖLLING, COLOGNE.

I am going to-morrow to Utrecht, where I expect to finish on the day after—if not to-morrow evening.—

Indirect news has come from Berlin. 20 shots were fired at the breastplate, but only 11 at Jäger's. The 13th and 14th went through the thin part near the edge. It has been explained in writing why we have the edge thinner, but it now seems necessary for me to go to Berlin for a couple of days. I only wish I could have a recommendation from an influential house, for Jäger evidently had something of the sort, and the officers of the regiment favour him disgracefully. Just think what a shame it is that they should fire 20 shots at ours and only 11 at his. The 4 last are more dangerous than the first 16, as the metal is already strained. I shall take another 2–3 breastplates with me. We are all of the opinion that the breastplate stood exceedingly well ; no one expects such a test. I shall demand that the extra 9 shots shall be fired at Jäger's breastplate ; I will also find out about the objection to the loophole-shutters ; there can be no complaint on the score of their not being shot-proof, moreover they can quite well be supplied 25 to 30 % cheaper.

Berlin, 21.12.1847.

KRUPP *to the* WAR MINISTER, VON ROHR,
BERLIN.

Your Excellency,

I have the honour to express my most obedient thanks for your gracious communication of 15th November.

In accordance therewith I continue to look forward expectantly to the results and decisions which may follow on the further tests of the crucible-steel musket and rifle barrels supplied by me in a rough condition.

As regards the 3-pounder crucible-steel cannon, I have already complied with a request from the Royal Testing Committee for explanation and concurrence respecting its preparation for the forthcoming experiment, and I merely venture most obediently to lay before your Excellency the petition that this preparation may be made with as little delay as possible, and also that, as soon as the season permits, the tests to decide the question of the utility of such crucible-steel guns and the most suitable design may be carried out on a proper scale.

As regards the manufacture of swords, I confess that I should not like to enter into competition with the famous Solingen arms-factories, since the lead which they have gained in this product, specially localized there for centuries, is too great, and I prefer to accept most thankfully the most kindly promised recommendation of my material for such uses rather than to compete for the delivery of finished swords. . . .

Berndorf, near Vienna, 1.1.1848.

HERMANN KRUPP *to* ALFRED KRUPP.

. . . You say " We cannot supply better breastplates "—do you not think, then, that the most tenacious steel is the best for the purpose? No one can deny that the first test-sheets, made of the most ductile steel and carefully treated, stood splendidly, or (unfortunately) that the later tests of harder steel in Berlin, Vienna, and Lord knows where else, have turned out badly. I have drawn your attention to this, because it seems to me that for years past in the Works either little account has been taken of differences of carbon content in crucible steel, or quite other views have arisen as to the appropriateness of the different varieties. . . .

Crucible-steel Works,
Essen, 16.2.1848.

KRUPP *to* PETER BRÜNINGHAUS,
BRÜNINGHAUSEN.

. . . As regards my future requirements of Osemund, I will give you the following information. With a view to keeping my plant for the production of crucible steel as fully occupied as possible, I have been compelled to reduce the prices by an average 20% for the *same* quality. Now the fact is that the hammered Osemund, which I use for the first quality, costs me much more than the merely rough-hammered which I previously obtained, and on this account I cannot use any of it for the *second* quality, which will in future constitute the principal output for the market, as the latter quality is about another 20% cheaper than the former. . . . I am now aiming at pushing the sale of crucible steel as much as possible, and have reason to hope that it will be so increased through the reduction of price that the future consumption of your Osemund will be far greater than in the past, but this cannot be made to happen all at once, and I cannot yet give you any prospect that my orders during the next half-year will be important. I must first try to liquidate a considerable capital tied up in a large stock. The experiment with the small lot of rough-hammered Osemund has not turned out satisfactorily, and, although I have no doubt that a repetition will bring a satisfactory result, as regards quality, if the constitution of the iron does not differ from that of the kind of Osemund previously obtained, and although I intend to make this test, yet I am not pushing on with it at this moment, as I am still most amply provided for the next few months with material and finished goods for the corresponding quality.

It is my desire that our old pleasant connexion—in spite of the momentary pause—may be still more active in future. The circumstances explained above do not, however, permit me at the present time to give you more precise information, and I must confine myself to this frank statement of the reasons. . . .

Essen, 3.3.1848.

KRUPP *to* RICHTER & HAGDORN, PARIS.

I am in receipt of your news of 27th ulto., which arrived only yesterday.

In the first place, I have to make the urgent request that you will be so good as to take into consideration, in regard to my Paris stock of machines, either their insurance against destruction with any existing Insurance Companies, or the deposit of the most valuable articles with reliable friends. We must face the possibility of the working classes proceeding to smash up machinery, in which case they would attack everything foreign by preference.—

Since, for the rest, no conception can be formed here of the present circumstances over there, and of what may happen, I must leave the safeguarding of my interests entirely to your discretion, and I hereby give you the necessary authority.

May France soon quiet down, and may pleasant and profitable relations result for us once again.

Essen, 10.6.1848.

KRUPP *to* RICHTER & HAGDORN, PARIS.[1]

Who is there who is not suffering from present conditions? We must just keep our heads above water. For the moment I have nothing comforting to tell you, but I have no doubt that sooner or later I can be of service in your further plans; at least, I should like to. We have done some work here for Mints, and thus kept the Works going. A week ago, a plenipotentiary from Petersburg, who has ordered a spoon factory, was here. Later on, I saw him in Brussels, whence I returned here 2 days ago. We looked at Bonnevie's little establishment there together. On 15th inst. I am going to Brussels again, or, it may be, arriving there in the evening, in order to receive an Englishman, who wants to establish a spoon factory and to see one working here and in Brussels.

[1] The agency relation between Richter & Hagdorn and Krupp had in the meantime been dissolved.

Unfortunately, I have no time to come to Paris, as we are coming here direct. Thus we are kept at work here. My brother in Vienna is no longer making spoons, but—weapons. —To discuss your interests in connexion with future plans would probably need a lengthy talk together. I shall only stay over the 16th, at the *Hôtel de l'Univers*; as I have said, I cannot go to Paris, and, on the other hand, a journey to Brussels would not be worth your while. For the rest, I assure you that at any time a visit from you here would be a great pleasure for me, for so long as you feel inclined to stay. I live quite alone, *en garçon*—perhaps we could devise something or another. I am hoping also to be doing business soon in North America—one always hopes for the best.—

Above all, I urge you to have every care for good dry storage and preservation of the rolling-mills and rollers from the Paris warehouse.—If it suits you to come to Brussels, this will be quite agreeable to me. The friend whom I am expecting at the hotel there is named John Smith, of Birmingham. . . .

Essen, 19.8.1848.

KRUPP *to* GUSTAV JÜRST, BERLIN.

I have not been able to answer your two friendly letters earlier, having been prevented by absence and an indisposition. I was glad to hear that you and your lady have again settled down at home, tolerably contented with both domestic and external circumstances.—As regards business, I cannot yet give you any definitely satisfactory information. Owing to the revolution, which for the time entirely upset our negotiations,[1] I decided, with your knowledge and approval, to make other arrangements in the interests of the Vienna factory, and am now in the position of being provisionally bound thereto, a matter about which I was still in doubt when you were here, as my explanation of the whole business of manufacture may have shewn you. So, until I am quite clear about my altered position, I can neither do nor offer anything further, but if I get a free hand to make a

[1] Regarding the establishment of a spoon factory in Berlin.

supply, you will be the first to get it, provided that it is sufficiently large.—

I should much have preferred to write that I should have great pleasure in establishing a factory for you to-morrow morning, but at this moment I can unfortunately promise nothing, glad as I am to make money when I can.

If I am well enough, I will come to Berlin very soon and tell you more by word of mouth. . . .

1849 to 1860

1849 to 1860

The year of the March revolution, the very days when the outbreak took place in Paris, made Alfred Krupp sole owner of the undertaking to the welfare of which he had devoted 22 years of his life in the service of his mother and the family. He acquired it—when near a second collapse—by purchase from his mother, and Therese Krupp's will assured to his sister and brothers their share of the then modest value of the Works. The joint effort of the three brothers—of whom Hermann had for some time been entirely taken up with the Berndorf business, while the younger Friedrich had not succeeded in carrying on at all times to the benefit of the Works—now came to an end, and a new organization of work and supervision marked the commencement of one-man rule. Two main tasks occupied Alfred Krupp in the first years of his new and independent activity : the securing of recognition for his crucible-steel gun, which was at last tested in 1849 by the Prussian Artillery Testing Committee, and the thorough exploitation of the spoon-machine, for which he had for years sought in England a suitable contractor and world-wide business. This was realised in 1851, at the time of the first International Exhibition in London, and provided him with the means for the further extension of his Works, without which he could not fulfil the tasks of the future, his mission as pioneer of steel in industry, transport, and armament manufacture.

Essen, 16.6.1849.

KRUPP *to* G. JÜRST, BERLIN.

Mon très cher ami,

. . . In mine of yesterday I informed you that I had already instructed S. Oppenheim, Jr. & Co., of Cologne, to pay you the 4,000 thalers. You will thus, according to your letter which I received to-day, have the money in sufficient time. Again many thanks ; I am also much obliged to you for the advertisements and articles you sent me. Please have the enclosed reply to the foolish *Vossische*[1] article[2] inserted in Speners'[3] paper, and let me know the cost in due course. N.B. Not at the end among the advertisements, where it will perhaps not be read, but let it go in front, 1st Class.—I am really very sorry that this subject should be dealt with in the paper, because it thus becomes better known to various people, whereas obscurity and lack of notoriety would for the present serve me best on account of taking out the patent.

For that reason I had requested the War Office and the Testing Committee to prevent the matter becoming known, and had obtained their promise.

I should like to know who had the article put in—no friend—and how the fellow got hold of such untruths. You can give your name to my statement, and if you think good for your protection say at the end of the article that the manufacturer, Krupp, takes responsibility for the statement which he has made herein.—

My very kindest regards to your family.

P.S. The importance which this malicious writer attaches to the consideration that a bronze gun, when worn out, even if that happens soon, must have, as indeed it has, more value than my crucible-steel gun, is very amusing, in the face of the certainty of a huge difference in their length of service. The man cannot be very intelligent, otherwise he would be able to see that just as he, while alive and active, is worth more than 1,000 carcases, so the value of everything of quality lies in the work that it does—that one does not ask of a machine " What is it worth when it is done for," but " What will it do, and how much and how well and for how long ? " It ought to have dawned upon him that the cannon is a machine. The fellow must be a butcher, and so naturally looks to the carcase for all his profit.—

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[1] The title of the paper at this date was *Die königliche priviligierte Berlinische Zeitung von Staats- und gelehrten Sachen.* It formally adopted the sub-title *Vossische Zeitung* in 1873.—Translator.

[2] The *Vossische* article concerned the testing to destruction of the first Krupp gun at Spandau.

[3] *Berlinische Nachrichten von Staats- und gelehrten Sachen,* edited by T. C. P. Speners.

Essen, 4.9.1849.

KRUPP *to the* ARTILLERY TESTING
COMMITTEE, BERLIN.

I take the liberty most obediently to bring my crucible-steel gun to the recollection of the highly-esteemed Testing Committee of the Artillery, in Berlin, and venture to request that the Committee may be pleased to cause me to be supplied with a copy of the report of the results of test in Berlin of the first gun sent in by me ; at the same time I desire to add the respectful statement that I have now put in hand as well a 6-pounder, for which, with a view to meeting the main objections to the first and cheaper design, there is to be a bronze jacket instead of a cast-iron one.

With the most profound respect,

The highly esteemed Royal Committee's most obedient servant. . . .

Undated
(early in the 'fifties).

KRUPP *to* ADALBERT ASCHERFELD,
ESSEN.

The silver must still wait ; occupy yourself as much as possible with the *organization of the Works.*

First distribute the orders for goods, telling Strünck the size and number of the stamps, so that he and Conrad can pick out suitable steel.

All smiths' work is to be turned over in future to Strünck, and he is to distribute it in turn to the other smiths.

Strünck, Vierhaus, and Schürmann must always complete what is ordered as rapidly as possible.

When Hagewiesche Sen. has no crucible charges to prepare, he is to help Caimbronne or Multhoff with the finishing.

Melting is not to be started until steel is really wanted, so that meltings can go on in continuous series. The large furnaces are to be repaired at once. The melters are to get on at once with cutting off iron for the cementing-furnace, and then with making crucibles. The coke-burners must have their spare time assigned and supervised elsewhere.

24 small machines of the latest types may be put in hand, consideration being given to what parts are already available, particularly rollers, set-wheels, driving-wheels, and housings, they are to be given out before and after to Eckerfeld, Riehl, and Caimbronne, and a record kept of what each one has and what he delivers to stock or for despatch. After the balance has been taken, an account is to be opened of everything in stock, and all additions and issues are to be entered therein. Herr Gantesweiler will help with it.

Marquez dans la liste des ouvriers ceux qui fument.[1]

In the locksmiths' shop (*Bellevue*) Hagewiesche Jr.[2] is from now onwards to be foreman, to distribute the work and be responsible for everything. . . .

No bench-worker is to leave his work, and he is not to take anything to the hammer-shop or elsewhere. This is done by the foreman only, who may go himself or send someone ; no tool will in future be renewed without asking. Conrad and Strünck are to give nobody steel or other tools than what the foremen, with my permission, order. What the foremen order is to be made by them.

The running around from Bellevue and the turning-shop is to cease entirely. Anyone who wants water to drink is to tell the foreman, who will have enough fetched for everyone to have some. Anyone who is not content with these regulations can go.

Cologne, 5.2.1850.

FRIEDRICH SÖLLING *to* ALFRED KRUPP,
BERLIN.

You have come to be like the Wandering Jew, always travelling from one place to another.—When this letter arrives, you will, I suppose, be back in this country, and I want you to let me know by return whether we are still to leave for Berlin on the 12th, so that I can arrange accordingly, and arrive there either on the evening of the 11th or on the morning of the 12th.

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[1] Make a note against the smokers in the list of workmen.

[2] Joh. Hagewiesche Jr. was already employed in the middle of the 'forties in the erection of Krupp's Mint rolling-mills abroad. He was later promoted by Alfred Krupp to be the chief working manager throughout the Works : the "foreman of all the foremen," he called him in jest.

Tell me, too, whether you have yet been to Borsig's and convinced yourself that there is nothing to prevent the tests[1] being made there about the 15th ; and tell me who has been invited to see the tests, and whether you have yet spoken with Herr Mellin and persuaded him to be present as well—Herr Werner[2] is no doubt also formally invited ?

I have written to Heuser that we are arriving in Berlin about the 14th, and have asked him to advise Herr v. Wittgenstein[3] provisionally, so that he also can be present at the tests.—Do write to me a bit more fully about the whole business, so that I can explain matters—on Sunday I shall in any case see Herr Oppenheim at a *thé dansant* at his brother's, but I had perhaps better go to him before that on Saturday, and tell him that we are going to Berlin for the tests, so that he can see that the matter is being dealt with seriously at the earliest possible. . . .

Now write me as soon as you are back again, so that I shall know whether it still stands about leaving on the 12th and I can arrange accordingly. . . .

Berndorf, near Vienna, 19.6.1850.

HERMANN KRUPP *to*
GANTESWEILER,[4] ESSEN.

. . . As regards my coming to Essen, that is still very problematical, as every day confirms the view that it will be difficult to get away. The fact is that we here in Berndorf are in just the same case as you at the crucible-steel Works ; if we do not make and sell a great deal, a very great deal, there is no profit, and you know as well as I do that we urgently need to make some profit at last. I had aimed at arriving at a daily output of 450 doz. by the end of this year, and have so far scarcely been able to exceed the figure of 300 doz., to my great concern and uneasiness ; the hindrances and disturbances in manufacture are so various, and my own personal attention is so often wanted, that I can but fear that my absence would have serious consequences. Perhaps I may nevertheless manage to come to you by the autumn, if I can leave for a few weeks with less uneasiness.

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[1] This was a series of comparative tests, which A. Krupp had proposed, in order to establish scientifically the suitability for railway axles of the different steels and of the various kinds of crucible steel.

[2] Proprietor of the former national crucible-steel Works, "Karlswerk," near Eberswalde. Werner was Krupp's principal competitor, and was favoured by Borsig and the Minister of Railways.

[3] Von Wittgenstein and the Oppenheim brothers of Cologne had a controlling influence on the board of the Cologne-Minden Railway.

[4] Gantesweiler was now a proxy for the Firm.

My position is otherwise much more pleasant than previously, since I have become a formal partner, and I am on very friendly terms with Herr Schoeller.

It is very sad that my poor mother should still be such a sufferer, and if my wife and I could come and see her very soon it would be some comfort to us. . . .

Finally, I am able to say that my hand keeps on improving,[1] but so slowly that I shall be very pleased if I can use it in a year's time ; at present I still have to go about with my hand in a sling like a wounded soldier, and it often annoys me that I cannot take hold of anything. . . .

Berlin, 6.9.1850.

KRUPP *to* GUSTAV JÜRST, BERLIN.

I have just received, to my surprise and great delight, the bust of your father ; I shall value and treasure it both on account of the compliment paid to me and the excellence of the likeness. It has already taken its place between flower-vases under the mirror in my room. Many thanks to you and your father for this proof of the cordiality with which my feelings towards the family are received.

The news I have to tell you in the first place is anything but joyful. I lost my mother 4 weeks ago. She suffered inexpressibly. Her end came as a longed-for release from pain.

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[1] H. Krupp had injured his hand badly in a sleighing accident the previous winter.

I have refrained (except through newspapers) from any written announcement of her death. After your letter which said that you were leaving Berlin, and might possibly look in here on your return (from Switzerland, I believe), I really did not know that you were yet at home, and I have frequently thought of your coming visit. I have very frequently been away, and am on the point of going again, but would be sure to be at home as soon as I got warning when to expect you.

Lastly, I must tell you, as regards the outstanding accessories for teaspoons of filleted type, that, according to your advice, there is nothing more to come as far as we know. You appear to have what was ordered, and if you really find that more rolls are necessary, please send drawings (samples) and we will help.

At this moment I have learnt that " one can never know," for the pair you are enquiring about is really still in the hands of the engraver, and will be sent off in 5 to 6 days. Instead of writing this letter afresh to get rid of the above blunder, I must let it go as it is, else I shall not manage to reply to-day, for I have an intolerable amount to do. . . .

Essen, 27.3.1851.

KRUPP *to* GUSTAV JÜRST, BERLIN.

My dear friend,

You demand a bill ! ! for rye-bread ! ! As a punishment for this impropriety, the largest rye loaf Westphalia has ever produced is going to you by next opportunity, and I nearly wrote to Emmenthal for a cheese to be sent to you in the rind of which you could take your afternoon nap.

I am sending you the enclosed comprehensive tracing of the rolling-mill with thin rollers (which have been in stock for a long time and are kept oiled, as you know). The object of the rolls is not to roll raw metal with oxide on it, but metal which has been cleaned by pickling, which they turn out quite thin and even, little or no annealing being necessary, for with the smaller machine of this type we have rolled stuff so hard that it was springy like steel. I have not had time to complete the machine and erect it here, and really did not like to entrust it to anyone, as I have in view another patent for it. For the rest, I do not know the value of the design on a large scale, and will not promise it beforehand. It is at your service before anyone else, and on the most agreeable conditions if you think further about it and if you will have the mechanism made by a trusty man, and also set the machine up in such a way that its design remains a secret between us.

The machine will go to you at your expense, and if not suitable will return at your expense. You may keep it 6 months before you accept it or decline it. It is then on offer to you at 800 thalers,—and if you decline it you pay 50 thalers, to put it into new condition again. If I were convinced that the efficiency of the machine is as it is at present supposed to be, and if I regarded this delivery as a business transaction, I should have to ask 1250 thalers for it. I am bearing in mind, however, that you also are taking a risk, since you must have the driving-gear made, and I should never want to enrich myself at your expense.

The machines which ought to have gone off in the course of last week are not going until this week, and you will be thankful to me for the delay. It turned out that your spoon-handle was too long for the circumference of the largest roller, and that the requisite diameter would not go into the framework. What was to be done? Instead of a lot of tiresome discussion, the workshops worked at the job Sunday and holiday and day and night to make two other housings instead of the old ones, and now thicker rollers can be fitted in; a description of the alteration will be sent to you with the consignment. For weeks I have been constantly in spirit *en route* for Berlin, but fresh hindrances have kept arising; on top of all, my brother[1] suddenly got a bee in his bonnet 4 weeks ago and went off to Sweden on private affairs, thus increasing my work still more. So for the present I shall not be able to come, as I have several small necessary tours to make before my visit to England. By Sunday I expect to write you the date when I am going to England, and I shall be very pleased if we can be there together. I am going first to Birmingham for a few days to take Hagewiesche there, and shall then probably come straight back, to go again about May for some time.

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[1] This was Friedrich Krupp, the youngest of the brothers, who had worked in the business until now.

No more for to-day.

London, Tuesday, 8.4.1851.

KRUPP *to* GANTESWEILER,
ESSEN.

Yesterday evening on my return from Birmingham I found with your letter one from Herr Sölling which gave the same news. I have nothing to reply and nothing to announce, except that I am going to Birmingham again on Friday, to superintend the beginning of the work,[1] as the rolls have been lying in the Customs House here for a week and will not be in Hagewiesche's hands until to-morrow.

I was expecting the fork-roller with the lily pattern, so that when the two sets of dies which are complete, and two pairs of the two rich patterns, had been tested, I could count on the firm's readiness to pay, and the breaking of this roller is most awkward for me, besides being nothing but infernal carelessness, for I told Borgman that, whenever he is not quite sure that he has the quite soft steel, he should rather harden 4 times over, increasing gradually, than at once give the maximum hardness, and that nothing is lost by adopting this precaution, for it is worth the time it takes, while the gain is that no roller can break in half, however hard it is. Koch similarly has no excuse, if he anneals a roller too soft, for I have told him, too, rather to renew the annealing 6 times. I mean to see whether what I once say cannot hold good always, and whether I cannot save myself from giving reminders, whether the men prefer paying fines to getting gratuities, and I shall go more closely into this case. Borgman has no excuse if the soft mark (1) was not on the roller. If he is not quite sure that the steel is only slightly hard, he can have the roller tested again with a burin by

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[1] The erection of a spoon-rolling mill at Birmingham for the firm of Elkington, Mason & Co.

Herr Nesselrode after engraving by Bremme, and he can test it himself too with a file in a place where no damage can be done, so as to be thoroughly certain of the approximate hardness, and then it cannot go wrong, the roller must be good and cannot get too hard ; if he begins with hot water and gentle heat, that ensures still more the tenacity of the steel, and it is less likely to go in two later at an equally high degree of hardness than if it is brought to this at once. I suspect the roller was one of F.'s . . .

Apart from answering this, you need not write to me in England, unless I advise you to the contrary ; I shall then be going back as fast as possible, staying in Paris 1 day, back to Essen, where I shall attend quickly to what is most necessary and then come here again.

Let Herr Sölling know the little of this that matters ; I have nothing else of importance, and another letter would cost me too much time ; I hope he is at the Works.—

I am looking forward to further good news about the big castings ; to-day I shall approach the Committee for permission to send in something more.[1]

London, 13th April, 1851.

Krupp *to the* "Collegium"
(Board) of the Firm of
Fried. Krupp.

Gentlemen of the Collegium,

. . . On Friday I went to Birmingham. The engraved rolls had arrived, but a good deal of the driving gear was still lacking. The annealing furnaces are not yet ready, so that it will be Tuesday before we can begin gradually working on a small scale, and I am accordingly superfluous there, and am staying here for a couple of days, to attend to everything that I can do here. This pair of rollers for Mr. Mason is of great importance, he is so taken with them, and thinks for the time being about nothing else. If steel is available, one or two more might be put in hand, so that one pair is sure to be all right. The rollers can be well bored out, so as to hold the more surely ; in the □ spindle there can of course be only a small hole. Mr. Mason told me yesterday that he is sure that if someone in Birmingham set up a rolling-mill with such rollers, he would make a large fortune ; he is still thinking what to do. There is a big place to be had there for £3–4000, with a steam-engine of 80–90 H.P., and it would perhaps take 12 rolling mills of 18 to 48″. I told him I would supply the large ones in unhardened crucible steel and the small ones hardened, and that he might count on my doing everything possible. I am not pushing him, but just listening to what further reflections may occur to him, and am making my calculations meanwhile. He has the money, as he has made over £250,000, and a trifle into the bargain, out of steel pens.—I hope the ingot from all crucibles together will be made in the old melting-house ; I am thinking of having only the head forged, in order to shew that it is malleable, and that can, I suppose, be done at Oberhausen[1] ; if we can satisfy ourselves from the outer surface that it has not collapsed at the core, then we will exhibit it to shew the fracture ; in that case the middle must be broken, where the head would usually be.—

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[1] For the International Exhibition in London (1851).

We will make the English open their eyes. Hörde and Eschweiler have, so far as I know, no heavy hammers. Hörde has the heaviest, just the same as the Sterkerade ones ; we have in any case to go to Sterkerade. I suppose the rollers for Spillenburg have been cast with a centre piece of 1½–2′? If they are forged to 16″ or even remain 15″ when turned, that will have to do. After the first rough turning, they are cut clean, and again forged. That will give a bit of work. If these jobs continue and sales are certain, then we are in want of the heavy hammer, which must wake the Antipodes from their slumbers. Time brings wisdom—but *monnaie* first. As I have let you know through Herr Sölling, we can send what else we please.—When I return, there is the tyre to be made ; if, however, everything else goes well, and a trial can be made with the centrifugal arrangement, I have no objection.[2]—I want another ingot of 35–40 crucibles for a locomotive crank-axle of the best and most tenacious O of Osemund, which too must be made at this time, even if the axle cannot be despatched until May. Further, please arrange for Multhoff to make as quickly as possible a complete officer's-breastplate lined with orange-yellow silk, to stand by the gun alongside the common one. If Multhoff and the grinder have not enough time, I shall have to ask Camphausen for his, and then make him a new one, but if, without prejudice to other work, a new one can be made, all shiny, cleanly polished, and carefully worked up, then *tant mieux*.

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[1] At the Gutehoffnungshütte.

[2] This refers to the beginnings of the manufacture of weldless railway-tyres.

I must now close.

Please inform Herr Sölling of everything, and tell him that I would write to him if I had anything further to relate.

Adieu, gentlemen of the Collegium,

Alfred Krupp.

London, Saturday
(about 18th April), 1851.

Alfred Krupp *to the* Firm.

Gentlemen of the Establishment,

On Tuesday I went to Birmingham for the 3rd time. Work had just begun there, and had to be stopped again, because some parts of the driving-gear were too weak and some had to be altered, in consequence of departure from the sketch I sent. Consequently I brought Hagewiesche here at once, to erect our exhibits, which were all rusted up, with the exception of the thickly-greased rolls. Fortunately a dozen capable Cologne joiners arrived, whom I got hold of, and in twice 12 hours, during which we worked without a break, everything was unpacked, rubbed down with emery, and stood in its place. The gun is the greatest attraction. The chief of the artillery has already paid me a call. To-day we have to work at lacquering, putting up tents, and so forth, and, as soon as this is finished, I am coming back at the earliest moment, in order to be here again as quickly as possible and then in Birmingham to talk about payment. Hagewiesche, who sends a message to his wife that he is enjoying himself, was back in Birmingham again at 2 o'clock last night, and will now after breakfast be at work there once more. An English paper says that Turton[1] of Sheffield will send a 27-cwt. piece of crucible steel to the Exhibition. It is probably my own doing that he has worked at making a big ingot, for I spoke of it in Berlin when he was there. So it is now all the more necessary for us to send the ingot from 98 crucibles here, even if we had 14 large crucibles in the old melting-house and had to join another piece on to the mould. As to the material for the big ingot, it is all the same to me, so long as it is as malleable as possible. It can be as hard as is most compatible with the certainty of the crucibles holding and being all ready together. I must now be off to the Exhibition, so will close.

In addition to the big ingot, let us send whatever can be got ready . . .

Alongside the gun, a military tent with the Prussian flag is being put up.

In future everything must be greased thickly, thick with fat, and even everything inside between the bearings in the sockets &c. All the cases were damp inside—and the strong cases with large rolls partly broken.

London.

Alfred Krupp *to the*
Crucible-steel Works,
Essen.

Early on Sunday, about 11th May, 1851.

Dear Works,

We have been here since Thursday, and have now arranged everything. Our things have a very fine position and attract marked attention. It is painful waiting for the other things. Yesterday I was at Hebeler's,[2] expecting the breastplate, rolling-mills, and steel fracture to have arrived, but he had still no advice of them. I hope that the cleanest of the two ingots will be forged at the head without delay and sent here. I can understand that it has given a lot of trouble, but that will be overcome, as the need and the urgency are known. The English have a 2400-lb casting lying here, with an inscription " Monster Casting," and a lengthy description of the magnificence of the article and the difficulty of producing it ; none of it is forged, and there is nothing so far to prove that it is not cast-iron. I have been saying we make little bits like that every day, and I would send its grandpapa. Should the forging not have been managed at home, no doubt Herr Lueg[1] will have been ready to have it forged hot with one of the steam-hammers, for one hammer is working there, and the heating of the ingot could very well be done on the ground.

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[1] The official catalogue of the Exhibition shews Thomas Turton & Sons as exhibiting, amongst other things, "refined cast-steel in the ingot."—Translator.

[2] The Prussian Consul-General in London, who had temporarily taken over Krupp's agency.

To-morrow (Monday) evening I am going to Birmingham to see what is to be done there. I permit myself the pleasant hope that everything in the Works is going splendidly, and that no prompting from me is needed. My best wishes to all. . . .

The tyre must wait until I hear what it looks like and what is still necessary has been done to it. I should like an exact account of what it looks like.—

The Director of the Brunswick Mint is here as a commissioner. He has told me that the order would soon follow, only a delay has occurred because he wanted to have all the rolls at one time, and had declined to take only one or two pairs. He said that the Minister would shortly approve.

Breil offered to bet his head on the firm packing of the tinsel-rolls. The framework has gone in half, one cover is broken, and it will be a piece of luck if we can still use the rolls. His head now belongs to me, but I should have preferred the rolls undamaged.

Hagewiesche says, tell his wife that he is well, and would like to have her news as an enclosure. He has little time now for writing.

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[1] Director of the Gutehoffnungshütte.—Translator.

London, 13.6.1851.

KRUPP *to* ELKINGTON, MASON & CO.,
BIRMINGHAM.[1]

Dear Gentlemen,

I duly received Mr. Elkington's kind letter and shall wait on you Monday next the 16th.

In order to avoid any discussion or misunderstanding I explain to you hereafter what are my views my intentions and expectations. The slow advance of the full activity has sufficiently been analized. The cause is neither your nor my fault. I willingly bear the consequences by exchanging at my expense every roll that does not satisfy you entirely and there can be no further question about indemnity from my part. The due exchange of the rolls could be arranged from my home if only the contract referring to the mere supply of the machinery was to be fulfilled. My recent voluntary offer to teach you the engraving hardening and finishing of the rolls came from my consideration of your own interest. I do not sell it and if you had asked it as a condition of our contract I should have declined the business, for this is the most valuable secret of my manufactory and it is not payable. There is only my brother in Vienna who carries it out. I declined its communication everywhere else even to my intimate friend, Mr. Jürst from Berlin who must order every pair for Berlin and for Warsaw from my place. You shall have it with[2] the bargain on your promise to keep it secret and to carry it out only for your own manufactory of spoons and forks. After this allow me the remark that I could every day sell the machinery without any sacrifice a for it enjoys the credit.

My proposal is as follows :

I send you two pairs of soft rolls, turned, polished and ready to be engraved instead of each engraved pair which you desire to return of[3] which is still behind the number included in our contract. Besides this any quantity of rolls of the above kind that you desire for future want shall be supplied at once or later at half the price of finished rolls separately charged. Quantities of them are ready for despatch. My best engraver shall come to Birmingham to inform the person to whom you have the necessary confidence. One month will be sufficient but he shall remain longer if you desire it. Mr. Hagewiesche shall assist him and arrange the room and apparatus for hardening. What you will pay them for their activity will be left to your own pleasure. All my supply is warranted during one year from this day accidents excluded.

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[1] Written in English by Krupp. [2] i.e., into. [3] i.e., or.

I transfer on you by a legal act at once the patent right with the reserve in my favour that after one year I am entitled to supply the same machinery for one manufactory of Silver goods its licence included. However you may decide within that year whether you prefer paying me another sum of £2,000 in order to possess the patent quite exclusively.

Against these conditions you pay me at my call in Birmingham £6,000 by a bill on London. Please to take this proposal in consideration and to give me then the answer by " Yes " or " No."

Essen, 6.9.1851.

KRUPP *to* GUSTAV JÜRST, BERLIN.

I remember dimensions better than discount ; I am *very* accustomed to the former, and *not at all* to the latter, at any rate not to *giving* it. You claim like a stern parent that you still have 2½% to come to you, and apparently I am just to say " Yes " and " Amen " like a child. I hope we did what you wanted in helping you out of a difficulty by supplying the machine. You can send it back later unless you prefer to buy it.

I did not write about Herr Bernauer, because the idea of giving a share in the profits of the Works does not appeal to me, although I will readily give a respectable salary (and equally respectable gratuities, based upon performance). I am looking for someone upon whom I can always count, and whom I will willingly allow to share in the results of his influence on the prosperity of the Works, but not in the capacity of a partner ; i.e., not on a percentage basis, for I do not want to have to submit the balance-sheet to anyone ; my own cousin, who now controls, with the greatest attentiveness, the whole of the very important Works, does not dream of such a demand, and I should in any case refuse it even to him. I liked Herr B. very much, and I believe that, in addition to his known capacity as a technician, he would also be a reputable representative for travelling, which is what I need just at present as I do not want to travel any more myself as in the past, and yet I want the German railways, boards of directors, and factories to be constantly visited, a thing which is necessary in spite of the recognition our goods have gained, for people want to be talked to nowadays ; this has been thoroughly taken to heart by the English, who are always on the road. You will probably learn from Herr Luckfield that I am laying down a lot of plant again this year. The Petersburg factory has ordered from me a pair of large rolls of unhardened crucible steel for breaking down the German-silver castings, and the same sort of thing is now being asked for for iron and steel plates. I make them so cheaply that people have to take them instead of iron ones. Turned complete at 550 thalers per 1,000 pounds.—I have kept to my room for a fortnight, and wrote to Herr Hoecke at Nenndorf meantime, but had my letter back. If he is still in Berlin, give him my kindest regards. I have suggested to him that he should sell the whole of the trash in Poland, and return to his comfortable fatherland. If he likes life in cities, he will be much better in Berlin than in the Vodka-atmosphere of Warsaw. If he likes the country, he ought to come here into the Rhine neighbourhood. To be an old bachelor in Warsaw must be terrible ; it is unpleasant anywhere.—As for myself, call me a l . . . if I am not . . . within . . .

Berlin, 31.1.1852.

PRIVY-COUNCILLOR VIEBAHN *to*
ALFRED KRUPP.

At last year's Exhibition of the Works of Industry of all Nations in London, the medal for great merit was awarded to you by the decision of the judges appointed, for the crucible steel of a new and excellent kind which you exhibited, and we are sending you the medal herewith at the request of the London Executive Committee.

The collection of products of industry, invention, and taste, from almost all countries of the world, which was shewn at the London Industrial Exhibition, enhances the value of the distinction which has fallen to you on this occasion, and we recognize with satisfaction the evidence, involved in the award, that you have taken an effective part in worthily representing our national industries alongside those of other peoples.

ROYAL PRUSSIAN COMMISSION FOR THE LONDON INDUSTRIAL EXHIBITION.

With the award of the highest distinction at the Exhibition of 1851, and the erection of his new workshops and hammers, Krupp took his place in the ranks of the few big manufacturers of Germany, with whom in the past he had merely been competing for place—for recognition and orders. By his further determined championing of steel against iron as a constructional material, and of the German against the English product, he soon became one of the best known personalities in the realm of industry. His greatest invention, the weldless railway-tyre, belongs to this period, and, at the Munich Industrial Exhibition of 1854, brought him some measure of fame. He became better known still through his efforts, dating from the same period, to obtain recognition for the crucible-steel gun ; to this, in spite of the chilly hostility of the home authorities, Krupp devoted himself with tireless persistence. At the exhibitions in London, Munich, and Paris, he shewed his new advance in gun construction, and presented the gun to King Friedrich Wilhelm IV in spite of plainly evident opposition from military circles ; his life was largely spent during the following decades in this struggle against the conservatism of the experts. His victory in the field of steel supplies for railways and shipping was much more rapid, and the increasing use of his material in all the domains of transport helped him in his fight against the adherents of the out-of-date. But the home country, and especially the authorities, remained irresponsive, even in this field, and foreign countries contributed most to his growing fame and wealth.

Berlin, 19.1.1852.

KRUPP *to the* CRUCIBLE-STEEL WORKS,
ESSEN.

Gentlemen of the Establishment,

I have just had the letters of 17th (the carriage is coming here at once, so I am only writing this briefly).—I am waiting anxiously for the tyre, and want the second one to be forged complete as quickly as possible and as nicely as possible, dirty places or places of unequal thickness, which have been worked down with a cold chisel or a file before the last shaping, being forged over so that no one can guess that a chisel or file has been used. The single tyre cost 5½ thalers for delivery to the house, but that does not matter ; nevertheless I want to have the two here, the earlier the better (but good). After shaping, they might be annealed dark-red, so that they are not distorted in annealing.—If the reserve shaft can be made out of the tree for which Breil has offered 160, we need not trouble about 20 thalers, for wood of that kind is becoming scarcer and dearer, and we can use a lot more of it.

In general, I want to know only what is important, and not to bother my head about other matters, but I am perfectly satisfied with the way in which a short summary of everything has been sent to me.—

Set the gun[1] up somewhere in the turning-shop, or better, taken to pieces, and when the time has arrived, begin with the polishing-out of the bore and give a final rub over the whole surface. It must be polished as nicely as possible when sent.

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[1] The gun intended for the King.

Berlin, 23/24.1.1852.

KRUPP *to* ADALBERT ASCHERFELD,
ESSEN.

A brief report.

To-day I was at Pflug's, and there saw his springs and the English rolled spring-steel. All the steel is so smooth that there is no trace of hammering on it, quite straight and of even width, with round high edges. Not a single piece of the sample springs for the Eastern Railway is clean and smooth enough to be shewn by the side of these springs, and they have unfortunately already been seen here ; the opinion given was such that I promptly hid them in a corner and decided to send them back as quickly as possible.

Nothing more for to-day, except that, as stated, all work on the spring-steel must aim at equal width, thickness and smoothness. . . .

What we have supplied up to now can only be called rubbish, in outward appearance, in comparison with that made here. You can understand that at least as much is demanded from us, and yet Pflug has had a lot of trouble over his supplies. The eyes, too, are made much more accurately here. In view of the accuracy of work to which they are accustomed here, and the stringent conditions for the parabolic springs, whilst we at home have not got far with this sort of product, I declined the parabolic springs yesterday—on the other hand, the management has proposed to the Ministry to give us the axles, which we shall also probably have to turn at 3 thalers extra,—and then we can just go freely ahead with melting and first forging.

I have had influenza for a couple of days, so it may be Monday or Tuesday before I get to Stettin, and probably I shall come home the same week via Dresden. We must just quickly offer bow springs everywhere 10% cheaper—else we shall be left in the lurch.

Berlin, 3.2.1852.

KRUPP *to* GANTESWEILER, ESSEN.

So there is nothing to be done with the Mint in England.—Duffers, to worry themselves so about England's greatness as to see doubt thrown upon it by a supply from abroad.

I hope Conrad will soon be at work again, and tell my cousin to look around for one or two regular hammer-men, particularly one who is accustomed to work with a steam-hammer.

Only above all keep the boilers properly clean, in view of the long time we must wait for the new ones.

Berlin, 9/10.2.1852.

KRUPP *to* ASCHERFELD *and*
GANTESWEILER, ESSEN.

Do not send anything more to me here, as I am now leaving and shall be home at last inside a week.

The newspaper articles are now beginning to disgust me; surely they can leave us alone.

10th.

Yesterday I bought another 7-cwt. steam-hammer and a 24′ long heavy lathe, from the *Seehandlung*,[1] now Borsig's, and they will get to Essen quite quickly. The steam-hammer I bought extremely cheaply for 600 thalers.[2] They are now so perfected that I have reconciled myself to them.

To return to the above stupidities[3]; among many untruths, there is talk about "proprietors" of the Crucible-steel Works, so that, as I have hitherto presented myself as the sole proprietor of the Works, people will come to think that I have been bragging. That shews once more that nothing must be said to other people about the business, for scribblers quickly get together bits of present, past, and future, and work up a news paragraph for the public. Many may even think that we ourselves have a hand in the boosting although it is the last thing I should desire.

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[1] Borsig had bought the works of the Königliche Seehandlungssocietät (the Prussian State Bank) in Moabit.—Translator.

[2] £90.

[3] The newspaper articles.

Write to every editor who has published such articles, that, under instructions from me, Alfred Krupp, sole proprietor of the Crucible-steel Works, you beg that he will accept no further articles about the establishment, at any rate unless the subject of the communication has been passed by me as correct, in order to save me from unpleasantnesses, which would be bound to arise from such sources, however friendly.

Also, have the following inserted at my expense once in every paper which has had these incorrect articles :

> Various journals have recently contained accounts of my establishment, which, however well-meant, are all more or less full of substantial inaccuracies, so much so that I find myself compelled to make this public declaration.
>
> ALFRED KRUPP.
> Proprietor of the Crucible-steel Works
> of the Firm of Friedrich Krupp.

It will be seen from that that we have no hand in the boosting, and the brevity will shew that we do not want to compose an article ourselves, that we want to go our way unnoticed by the public—but not by consumers—for the note contains no positive statement, which would be something like publishing an article—and, further, that I must be what I have given myself out to be, ' Alfred Krupp, Proprietor of the Works.'

For the public, too, I alone am the proprietor of the business, for the fact that Herr Sölling is entitled under contract to a certain share as sleeping partner for a term of years is no concern of the public.

Have the paragraph inserted at once in any paper, such as the *Essener und Ruhr-Zeitung*, in which the incorrect articles have been printed.

Dresden, 16/17.2.1852.

KRUPP *to the* FIRM *of* FRIED. KRUPP,
ESSEN.

Esteemed gentlemen and friends,

Instead of arriving on Saturday, I had to remain in Berlin, partly for business, partly on account of a cold. The Mint is awaiting a written tender for 12 pairs of rolls, on the condition that I will do my best ; I shall give them 2 pairs into the bargain ; they are further awaiting samples of thaler-dies from F. in the hope that they will not crack round the edge. I have also at last won over the Hamburg Railway so far that a supply of 200 axles will probably now be ordered from us ; I have only to quote the price in more detail. The management of the Saxon State Railways (Director v. Weber) is absolutely in favour of our crucible steel—they want 350 springs, for which I am to send in a tender—and they also want tenders for spring-steel, locomotive axles, tyres, &c.—

Early to-morrow I am going to Leipzig.—

On submitting our tenders, no reference will be made to any of our offers, as the discussions were held with subordinate officials.

Please do not worry about me ; I shall not get lost. If things go well, I shall get to Magdeburg to-morrow evening, then to Brunswick and Hanover and then to Essen.

Ehrenreich is sending direct to Essen a case full of clothes and other things which I have bought.

That is all except my kind regards.

The gun must be completed quickly, in time for the Emperor of Russia to be able to see it in Berlin. The rest can wait till my return.

Berlin, Hotel de Russie,
undated. (July, 1852.)

KRUPP *to* ADALBERT ASCHERFELD.

Please do not leave the Works when I am away, and take the greatest care that an eye is kept on the people who come to the Works outside working-hours. *A propos.* Your Sunday trip *avec madame* has come to grief; if this was due to the gun, which had already gone, you shall have, in compensation, a more pleasant trip with your wife, to console you for the gun.

I shall have a hard fight with Wöhlert and Borsig; I have already heard that the former has himself forged 3 axles of Werner's, and I doubt whether he will accept all eight, at any rate at present.

Just have one for Wöhlert and one for Borsig forged as quickly and as well as possible; we will send these to them, and then again one apiece just as quickly. Meantime they will be pacified, and we can come to an understanding about the price and the work.

On the business side I have nothing to tell you, as I have not been able to make any calls. Herr Pietzker has the keys, and I have already advised the Ministry that the cases of springs are coming.

Let Herr Gantesweiler, and anyone who has to write to me, know that my headquarters are here, and that I am going to Potsdam to-morrow at 6 or 9 o'clock, returning from there at 6 in the evening; yesterday morning I was there as early as 7 o'clock. Yesterday I received the decision that the gun was to be set up in the marble hall in the Potsdam Stadtschloss,—which we have done to-day with 6 artillery-men. The King said the Emperor of Russia should see it there. There is nothing else in the hall except a large urn, a gift from the Emperor of Russia.

I expect Herr Sölling will be in Essen; please inform him of the above, and say that I have just received his letter, but cannot write another line to-day. So good-bye.

Berlin, Friday, 16.7.1852.

KRUPP *to* FRIED. KRUPP
CRUCIBLE-STEEL WORKS, ESSEN.

The piston rods at Wöhlert's are inconceivably disgracefully made, and have certainly not been inspected; there is half an inch difference in the thickness of the flanges and

$\frac{1}{4}''$ in the thickness of the rods. I had to confess that it was a botch, and to agree to a rebate. Even if the hammer was going badly, such a bad supply ought not to have been made. So no account can be sent for the crank-axles. Herr Borsig is anxious for the first axle, and if he is not going to get it within a couple of days, a letter must be sent to him to say that it is leaving by express on such and such a day. I may possibly have finished in 2 days—it still depends on Potsdam. Letters may still be sent here, until I definitely advise my departure.

Berlin, 21.7.1852.

KRUPP *to the* FIRM.

To-day I have spoken with the King, to-morrow a couple of calls to make, and leave to-morrow evening 10 o'clock, so shall be in Altenessen 6 o'clock Saturday evening.

P.S. It is possible that I shall not leave until early Sunday, and then come by post from Oberhausen in the evening.

Essen, 3.3.1853.

KRUPP *to the* MINISTRY OF COMMERCE, INDUSTRY, AND PUBLIC WORKS, BERLIN.

I have the honour—and owing to my absence only now have the opportunity—hereby to express my gratitude to the King's High Ministry of Commerce, Industry, and Public Works, in Berlin, for the gracious decree of 5th February, regarding the grant of a patent for my process, described in specification, for the production of tyres from crucible steel without welding, and declare my obedient acquiescence, as in duty bound, in the decision to exclude the tools from such patent. . . . In respect of the duration of the patent, I beg the King's High Ministry to permit me the observation that it is very desirable, in fact necessary to the assurance of a reasonable profit from the considerable plant required, that the patent should be granted to me for at least ten years instead of six. I hope, by the use of the invention, to abolish all existing troubles due to the rapid and uneven manner in which the tyres of locomotives, tenders, and waggons wear out, with the resulting disadvantages and dangers, *but meanwhile years will elapse before this innovation wins recognition, and my patent will expire before I have gained anything by it, for a long time will probably be spent in experiments.* The manufacture of such tyres demands such expensive plant that I must certainly take into account the consideration of remuneration on the outlay. I am ready to devote the successful results of my industry to the rapid development of this new branch, and hope thereby to serve the general interests of the railways ; I also declare that this request is vital to further enterprise on my part, and I therefore submit the matter to the kindness of the High Ministry, whether my most humble petition for the prolongation of the period of the said patent to 10 years may be approved.[1] I obediently enclose 1 thaler for the stamp.

Cologne, 25.4.1853.

KRUPP *to* GUSTAV JÜRST, BERLIN.

Years after I gave my word[2] that I meant to marry, I have at last found the one with whom—from the first moment of meeting—I have hoped to be happy, with a confidence that I never before thought possible. The lady, to whom I became engaged yesterday, is Bertha Eichhoff, and lives here in Cologne.[3]

This news for your friendly interest, and please send this letter on to Warsaw to my friends and well-wishers, Hoecke and Luckfield.

Yours sincerely and happily
ALFRED KRUPP.

You will realize that I cannot write much in my fiancée's house, and will excuse brevity. What will your father say ?

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[1] The patent was in the result granted for eight years.

[2] See end of letter 6.9.51.—Translator.

[3] The marriage took place on 19th May following.—Translator.

Essen, 17.11.1853.

KRUPP *to* G. JÜRST, BERLIN.

Our pleasure over your all-too-short visit has placed my wife and myself in your debt for this proof of friendship, and any time you, with your dear wife, want to give us this pleasure, we shall try to shew our gratitude by the most devoted attention. It is pleasant to us to know that you have returned to your charming family circle in such good health and in such evident good spirits.

As you did not give me the address of the furrier, I must trouble you again, by enclosing the accompanying letter and addressing to you a big fur coat, which the furrier will fetch away. Please arrange for him to do the work quickly. Moreover, I shall perhaps have to importune you about the bust as well, and to send it to you for you to decide who is to make it. I want it in any case to be in bronze and in the natural size of the plaster model which will be sent. Herr Imhoff, sculptor, of Cologne, who made the marble bust, will send the plaster model to you, carefully packed.

Wagner told me that Fischer, of the old foundry behind the arsenal, would make it very well in bronze, and, I think, fairly cheaply. When it has arrived, oblige me by asking him what it would cost in 2 different styles of completion, either in the most finished condition for a pedestal, to be set up in the corridor, or for standing in a higher position on a bracket on the wall. . . .

I am very sorry that friend Luckfield is still only in moderate health and not yet quite well,—I am very glad that Herr Hoecke keeps so well and thinks of me. Remember me to both at the first opportunity.

Finally, my very cordial greetings—and the same from my wife—to your wife and father. The latter's bust now stands in my study near the desk, where there are also the portraits of the Minister v. d. Heydt and of other personages, intended to encourage and inspire me by their example to make a success of things, just as Christ must strive in his way of life after nothing meaner than the Godhead.

Now farewell, and keep some affection for yours sincerely

ALFRED KRUPP.

Essen, undated.

ALFRED KRUPP *to* BERTHA KRUPP,
apparently in COLOGNE.

Tuesday, noon.

Dear Berth,

Your second note has just come. You will have had my first. Thank Goodness, I have got through half the time, and you will be back the day after to-morrow.—

I quite agree with Frau Bell's notion that plain silk does not suit you, but travelling clothes are not for ornament ; on a journey one wears the plainest dust-like materials, as they are always full of dust, which would be very ugly with taffeta, and to beat the dust off would be very vulgar. Cuffs, shirt-fronts, and all the flummery that is worn in formal dress, are gladly left off on a journey, just as gold and jewels ; one is downright and simple, with the consciousness of wearing a clean shirt underneath.

On the way I will shew you the German ladies from afar, bright-coloured and striking, like chambermaids going to a fair. " Ah, bah ! " you will say to yourself.

Now, sweetheart, do as you like ; I shall be just as pleased to take you with me if you wear yellow stockings, red shoes, a green hat, and a check coat.

I have nothing further to tell you now, except that I am sick with wanting you, and remain, longingly,

YOUR ALFRED.

Love to all at home.

(Undated, apparently from
Munich, July 1854.)

KRUPP *to* ADALBERT ASCHERFELD.

The trunnion broke away from the gun during the tests in Brunswick, partly because the overcharge was fired on the mounting instead of off, the mounting also being smashed, but partly also because the great fault in the gun, as also in the one sent here, was that the trunnion meets the tube at a rectilinear angle. Please, therefore, if there is still time, have the angles of the trunnion in the gun now in hand chamfered for a length of 2½ lines, like the spindles of rolls. You will of course be making large castings of all kinds for crank-axles, tyres, &c. ; a new gun for Brunswick must also be made at once.

The report on the tests was excellent, and the order for 12 was already prepared for the approval of the Duke, who was himself present at the firing ; and now this misfortune has, at any rate for the moment, spoilt everything.

I do not understand why the Baden crank-axle is taking such a terribly long time, in spite of its urgency having been repeatedly emphasized, and I almost doubt whether the anticipated overtime and Sunday work is being put in on it. The fractures of the tyres were magnificent. The appreciation with which our crucible-steel axles are meeting is indescribable.

I shall be with you in a week. Until then, kind regards to all.

The work on the gun must not be interrupted.

Munich, 27.7.1854.

Krupp *to* Friedrich Krupp,
Crucible-Steel Works at Essen.

I am waiting for news, and have had none as yet, and will just use this free moment to say that a good deal of expense has unfortunately gone for nothing. Three fractures included in the consignment of 17th July—2 of the locomotive crank-axle and 1 of the 11½″ heavy forged axle—arrived covered in rust and only fit to be thrown away, and, moreover, almost all the articles wrapped in paper, or not wrapped and not greased, are rusted, which has involved an enormous amount of work. It is evident that the things will not look as well again as they did before. The long 11′ bar is deeply rusted from end to end. The paper which we call rust-free is no use, and indeed does harm if the place is subject to damp. The cause of the rust is in the first place that, if only a part of the case or of the wood fitted inside it is not completely dry, then in hot weather further evaporation takes place and damp penetrates everywhere. Fractures need to be sealed watertight and airtight, and the omission of the precaution of using leather has had most unpleasant results. Everything bright must similarly be protected. I urge once for all the utmost care in packing, following this advice. Unfortunately I notice that the despatch of the articles has not gone ahead as was expected ; otherwise I should have had the breastplate which I shall so badly need to-morrow morning for a trimming to the gun, if Their Majesties are there. It is to be hoped that when this arrives the locomotive crank-axle will also have left, and that I have not wasted all the gratuities given to hurry things up. For the rest, the Exhibition[1] will fulfil its purpose.

I send my best wishes to all, and hope to hear good news of the Works.

Munich, 3.8.1854.

KRUPP *to the* FIRM.

The enclosure is for Herr Topp for the favour of alteration and forwarding to Paris.—I have just written to Herr Ficzeck[2] to-day. A copy of the letter will be sent by him to Essen.

Baron Chörney, who is a responsible official and represents the Minister from Vienna, and Engert have declared that in future the Austrian Railways are to have only crucible-steel axles and that the locomotive on the Semmering is to have crucible-steel tyres at once. Engert advises against weakening the axles. I am in negotiation about 200 tyres for goods waggons. I am guaranteeing 20,000 miles[3] without turning the tyre on the lathe.

What will Capt. Neesen say to that ?—The advantage of crucible-steel tyres is so evident that no one here is in doubt. I am leaving to-morrow, or on Sunday at latest.—

With best wishes.

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[1] The Munich Industrial Exhibition of 1854.

[2] Krupp's representative in Vienna.

[3] A German mile = 7.42 kilometres = about 4½ English miles.

Herr Haass[1] has not yet got the money which was asked for. I have duly received the letters detailed and 300 thalers.

What the London Exhibition of 1851 had started and the Munich Exhibition of 1854 continued—the bruiting of Krupp's reputation through the world—was made a certainty by the Paris World Exhibition of 1855. Here, where the diplomatists and industrialists of the world, monarchs and engineers of all tongues, met together amid the radiant optimism of the new French Empire, Krupp's guns and railway wheels outshone the industrial products of all countries with the brilliance of their polished steel surfaces. Krupp steel became the fashion, it was recommended and employed for Royal trains, Imperial carriages and yachts, and the Khedive of Egypt ordered guns from the Rhineland steel king, while the Ordnance Departments of his own country still pooh-poohed him. Krupp entered the lists against them, and he now had the strength to keep up the fight. The tyre patent granted to him protected his most important invention against imitators, and his revenues increased—and with them his responsibility, his debts and cares. But he had founded a family, the year 1854 gave him an heir, and with renewed energy he was now building up his life's work, putting aside with smiling contempt all suggestions of following the fashion of the day by selling out to a joint-stock company.

Undated (1855).

KRUPP *to the* FIRM.

I am expecting to hear by Monday that a man has been appointed to supervise the internal operations of the whole Works at night, and to control all the men, so that everyone shall be at work and nobody asleep or stealing time. This is to be decided by Herr Ascherfeld, Hagewiesche, and Herr Eichhoff[2] together, so that the person chosen shall be satisfactory for all purposes. He must be well paid and be on duty from 7 in the evening until 6 in the morning. Moreover, I am expecting that at last an arrangement shall be made for all the lathes for tyres and wheels to run constantly day and night, with suitable shifts, and that every new lathe shall be set up without delay and similarly run day and night, even if for the time as much as half pay extra has to be paid. I am expecting this so that our obligations may be fulfilled, and if this is not sufficient authority for Hagewiesche I want to know what is demanded, as this requirement must be satisfied at any cost, and I will accept no reason for neglect, as it has to be carried out at any cost.

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[1] Heinrich Haass, a former traveller in paper goods, entered Krupp's service as traveller at the end of 1852, and represented Krupp at the Munich Exhibition in 1854 and at the Paris Exhibition in 1855. Then he took over the Krupp agency in Paris, which at first included also Spain, Portugal, Italy, French Switzerland, Egypt, and Turkey. Haass was also authorized to sign on behalf of the then existing firm of Fried. Krupp, of Paris. He remained in Krupp's service until his death, on 21.8.1880.

[2] Richard Eichhoff, a cousin of Bertha Krupp, entered the firm in 1854 as Works manager.

Essen, 23.4.1855.

Krupp *to* Haass.

. . . We shall presumably in no case get all the requisite space in the main hall.[1] So put the most important there. But have the necessary solid support amply provided, even to excess—employing experts in construction. Do not spare nice talk and money to make yourself friends who will help you. Be very subservient to the Prussian officials, and similarly to the French. If the space in the main building is not sufficient, let some of the separate rollers appear in the other exhibition, so that the most brilliant articles shall attract attention first. . . .

. . . My journey will partly depend on your news.

Undated (probably end of June 1855).

Krupp *to* Haass.

To make a fracture *at one side only* proves nothing, as every casting is compact at one end—the uniformity of the compactness at both ends is what must strike every expert. I therefore suggest to break off either both pieces in the presence of the Minister, or else, the lower one first in the presence of several reputable witnesses and afterwards the upper and smaller end towards the head, to give real proof of the reliability of our work. In the latter case, the second one in the presence of the Minister, if His Excellency deigns to shew so much interest in my products.[1]

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[1] At the International Exhibition in Paris.

Present my compliments to the gentlemen collectively, and especially my hearty greetings to Tunner and Noback. Tell these two, and especially Oestreicher, of my quarrel with Bochum[2]; shew Tunner the material, and hear what he is prepared to do.

Get these experts to say whether pig iron, because it has been melted in crucibles, can be called crucible steel if the product is not malleable—I gave the precise description in the newspaper article.

Herr v. Dücker's article says nothing at all, and leaves it doubtful whether these gentlemen assert the malleability of their bell-material, which is the condition of the use of the term " crucible steel."—I should be surprised if the jury at their examination really regarded the bells as crucible steel, without having it proved to them that it is crucible steel. Perhaps it is now too late, as the decision of the jury has presumably been given. Were you not able to raise that previously ?—For the rest, if, in the interests of truth, Herr Tunner and others of the jury or persons interested in the matter will have a bell tested, I will place at their disposal the price of the bell—2,100 francs. I will then, should the bell, on being broken up, prove to be crucible steel—malleable as is required of crucible steel—pay the price and renounce any claim to the pieces, which can then be sent all over the world as marvels. Moreover, I will have nothing to do with it, but the men of science must take the matter up and demand its settlement.—Bochum cannot refuse, seeing that in any case the bell will be paid for. So try to arrange this without bringing me into it. But I will supply the money. . . .

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[1] This relates to an anticipated visit of von der Heydt, the Prussian Minister of Commerce.

[2] The Crucible-Steel Works of Mayer and Kühne at Bochum had exhibited in Paris their crucible-steel bells (steel casting), the material of which was publicly described by Krupp as pig iron. The dispute which arose was decided in Krupp's favour.

(Undated,
probably autumn 1855.)

ALFRED KRUPP *to* BERTHA KRUPP.

Paris, Wednesday, 5 o'clock.

Dear best of Berthas,

I can only tell you that I miss you sorely here, and that I cannot enjoy a single cheerful moment here without you. Haass has had to keep an appointment with Herr Topp ; I am looking after the house meantime, and paying some tedious calls. As soon as Herr Haass returns, I shall leave,—early on Saturday, I hope. There was something said about fetching you in case I stayed some time, but this is not a favourable moment and I might just as well have stayed at home. (This, however, *entre nous.*) I am really no good alone, and I am in poor spirits without you. I am looking forward to rejoining you, and will hasten back.

With deepest, deepest love, your true

ALFRED.

Essen, 23.2.1856.

KRUPP *to* HAASS.

It would annoy me very much if Herr Haass could not prevent the gun[1] being burst in the manner mentioned. I handed it over from the Exhibition for the firing tests in order to profit by the publication of the results, as every exhibitor expects to do with the testing of his product. The rational test has now been completed, unless it is desired to continue in the same way. Now, however, to load the gun full in order to be sure of bursting it would be quite the contrary of the reasonable procedure hitherto followed. It cannot be my wish that the gun should now be torn to pieces and the material given to the French factories to imitate, for I have no intention of having my invention exploited by others, but claim above all to assure the interest in it exclusively to myself. Does the French Government want to trick me, and am I in the end even to thank them for the powder which they have used in the interests of their research into this important question ?—In the first place I must ask that, if the tests with ordinary charges are now finished, the gun, being my property, subject to negotiation as to procedure, may be returned to me, in order that I may remain free to take it back, or, if preferred, to offer it to the Emperor, with further external ornamentation, to retain as a memento of the invention and the inventor—possibly fitted with the new mounting—or to test it further with that mounting. And if I ever supply a gun for destructive tests, I shall not proceed at once to extremes and load it full, but gradually increase the balls one by one, and similarly with the charge of powder, and inspect after each shot. I believe that the enlargement of the gun is a consequence of the friction and of the impact of the balls ; at any rate, I hope that it is so, and I see no advantage in dissuading people from the idea, but on the contrary disadvantage ; for I should not like to have to admit that, with that thickness, the material had not enough strength to resist the explosion.

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[1] A gun sent to France for the Exhibition, and tested at Vincennes with brilliant success.

Pyrmont, 8.5.1856.

KRUPP *to* HAASS.

Note for Herr Haass regarding the letter from, and reply to, Gen. Morin.[1]

After seeing the letter from the Minister, M. Fould, which gave assurance of Government support, I believed that I might expect nothing less than to be met half-way in regard to the guaranteeing of the validity of my patents. Except on this assumption, I should not have expressed my readiness to erect a factory in France, and if the steps taken with this object remain without result, I shall later on give this as the explanation of the impossibility at present of complying with the Emperor's desire.

[1] Krupp had been approached with regard to the erection of a crucible-steel factory in France, with an assurance of the strong support of the Emperor.

The credit of the invention belongs to me, and there is no factory in France yet sufficiently advanced or in a position to supply the article invented by me. To comply with my demand, therefore, injures no one else's reasonable interests. . . . I want, however, to be able to negotiate freely with whomever and in whatever way I please, or to be able to carry out the manufacture in France independently and without any connexions there : in no case, therefore, is Herr Bischoffsheim or anyone else to be a party to mediation if any obligation whatever (real or apparent), even only a moral one, on my part towards the mediator should arise therefrom.———

I have not been guided by any calculation of my own advantage ; I want to meet a wish—the moment, however, the conditions cannot be fulfilled and the assurance of support on the part of the Government is shewn to be a mere phrase, my declaration may also be regarded as such.

General Morin must be answered that I cannot rest content with the alternative of a patent for my steel manufacture in general ; I want no patent for that, because it would not suit me to give any public description of it, since I wish to prevent imitation abroad, and since I hope even after 15 years to be still the sole beneficiary of what, if described for the purpose of a patent, would become of use to others both before and after that period. Herr Haass should regard all discussions which are beside the purpose of my 1st condition as a waste of time, and I shall be much more pleased with orders from railways than if you told me that leading Paris houses with untold millions would like to combine with me. . . .

Pyrmont, 22.6.1856.

KRUPP *to* RUHLAND *and*
HAGEWIESCHE.

Ruhland and Hagewiesche must at once consider the following, and then take steps to carry it out without loss of time.

All tyres, including those which are despatched in a rough state, to be put through the finishing-rolls twice ; the first time only pressing down the flange until the shape is obtained, so that there is still enough to spare in the diameter to allow for forging and for spots and faults being cut out, and in places worked out cold or hot, and afterwards rolling once more cherry-red to dimensions, smooth and exact, without hammering, so that as far as possible only the outer crust has to be taken off on the lathe in order to produce the completed tyre, clean, and without much waste. Since as much as 10 to 20 lbs in weight is saved with half a line[1] in thickness, this work would pay in any case, as we shall often save double or even three times the amount. The tyres for Weidtmann and for England, France, &c., must all be made in this exact way, and in future all of them, even those which are turned here. I expect the greatest exactitude. More care too must be taken about uniformity in weight. A portfolio for the tyre work is to be kept and these and all future directions are to be preserved in it.

Berlin, 19.9.1856.
Hotel du Nord.

KRUPP *to* TOPP.

I have just come from the Disconto-Gesellschaft, and have there heard from Herr Weise that a credit of 30,000 and a capital contribution of 60,000 thalers in the business has been offered to us, and this will be confirmed by letter in a couple of days. I did not want to make any comment to Herr W. on why the credit is not in the usual proportion to the capital and I do not know what use the larger share is to us ; so I asked that the matter might be communicated in writing to Essen for the attention of my representative (you). The action you will now take I leave to your consideration, and should like you to talk the question over with Herr Julius or Ernst Waldthausen.[1] I have to-day had an interview with the Minister, and pressed the matter of the patent.[2] I am given little hope, in spite of my rights, and it is now alleged that the matter has been published and is no longer patentable, although the delay was actually due to the matter not being properly understood, and although my application was of older date than the publication of the patent by Bessemer.

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[1] See note on p. 62.

I will write to Longsdon[3] about it myself. The importance of the Bessemer invention is felt here, and experiments are being started in various quarters.—

. . . The Minister was very friendly, and listened to me very quietly ; I thanked him for the tyre patent, and said I hoped to help to prove how useful patents could be to a country's industries, and invited him again to Essen. If prints of the Works should come from Longsdon, I should like to have a couple sent here for display. . . .

Berlin, 10.10.1856.

KRUPP *to* FRITZ SÖLLING, COLOGNE.

In the matter of raising money, caution is needed above all, to prevent questionings and hesitations from arising from my statements, so that instead of advantage only awkwardness may result. I listen, however, and watch, and ask in such a way that no one realizes my object, and I aim at explaining it only where I can count on success. I shall offer terms such as those with Niemann[4], if I do not secure an advance of sufficient amount on the condition of gradual repayment. I am not yet decided about my course, and will again talk over things in general with Jürst and Troost, so as to get my bearings. An arrangement whereby a bank was, so to speak, drawn into the management, a sort of tutelage, would not please me at all, and similarly a joint-stock company would only suit me if I were in a position of not being able to get, or of not wanting to keep, any business at all. I have weighed everything very thoroughly, including your letter of to-day. Ernst Waldthausen, with his view of the circumstances, is a valuable and reassuring support to me, and what we want to get is only to be got by calm consideration and management. The desperate messages and panic-stricken pictures which have reached me here, could have none but a paralysing effect, making one incapable of following up our good and sound business in the confident spirit needed. I have arranged to go from here to Olmütz, and am also going to Vienna, on the strength of recent advice from E. Waldthausen. You will meanwhile have been at Essen. You will have seen much that must be altered, and much that is satisfactory. In the Works management my presence would probably be useful, but I am nevertheless hoping this time to get some compensation, if only by the very quantity of my personal calls. I have already been away 4 weeks, and you might say that ten times as much could be done in the time ; however, I have had very delicate work here, especially on account of the patent, about which I have had to go from pillar to post. It has been submitted to the Minister for approval in a restricted form, and now depends on him. . . .

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[1] J. & E. Waldthausen were Essen bankers ; in March, 1857, they became sleeping partners in the Krupp firm.—Translator.

[2] Krupp had, with the authority of the inventor, applied for a patent for the newly-invented Bessemer process, which was, however, refused by the Minister.

[3] The engineer Alfred Longsdon, Krupp's representative in London from 1856, and later a member of the " Prokura " (board of proxies).

[4] Niemann was for some years, like Sölling, a sleeping partner in the Crucible-steel Works.

Berlin, 15.11.1856.

KRUPP *to* TOPP.

Herr Ficzeck will report about Prague, where he came with me, and where, as in Vienna, we saw everybody. Our reception was full of promise for the future as regards tyres and springs, also tool-steel.

In Dresden, Herr v. Weber[1] is occupied with a proposal to the Ministry that the crucible-steel axles shall be introduced wholesale, and enquiries from him will probably have been received in Essen by the time I have returned. We will also offer springs of type II. Von Weber is against tyres, but will give way. It is a matter of caprice, because Nowotny is in favour of them. The latter is for tyres and will propose them, and not for axles, because v. Weber is advocating them. They are, however, in the service of the Saxon State Railways, and will be of assistance to us. From Berlin I have to report that the Lower Silesia & Brandenburg Railway expects the springs delivered sooner than stipulated in the contract, and in a finished state, even if in small lots. If the pig iron required for the springs has meantime been worked up for other purposes, as I must apparently assume from earlier communications, and it should so be impossible to give satisfaction as regards speeding up, Herr Mahlberg would shew us no favour, as the waggons are waiting. At all events, I hope I am mistaken and that, upon consideration, the work has gone on. . . .

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[1] M. Maria v. Weber, Saxon Councillor of Finance, and son of the composer.

I only arrived yesterday evening, but have already paid X calls here ; will write more to-morrow.

Berlin, 16.11.1856.
Hotel du Nord.

Krupp *to* Topp.

In continuation of mine of yesterday, ... I am very pleased about the good results in Paris and Petersburg. Zapp, of course, must not be stinted, so that he can proceed without anxiety.

As for Longsdon, arrange as you think fit, not in a narrow spirit, even if rather more money has to be spent, for business demands travelling ; it is possible that he takes his wife with him at the expense of the firm. I am thinking of leaving for Magdeburg to-morrow (Monday) or Tuesday. Send further news for me to Hanover, Hotel de l'Union. Tell our cousin, Herr Eichhoff, that, if we do not go to Munich, as I now fancy we may not, then he should go there, as soon as the necessary quantity of spring-steel for the Lower Silesia & Brandenburg Railway is ready.

. . . If you are writing to Herr Meyer,[1] tell him that, between last Monday evening and to-morrow (Monday) evening, I have spoken with all the Directors and traffic managers of all the railways from Vienna to Berlin inclusive, at Prague, Leipzig, and here. If one travels in the evening and at night and pays calls by day, beginning at 8 o'clock, and, if the amount of business demands it, also in the afternoon and evening, then one can get a great deal done. In future we must have people who only travel, and they must renounce winter and evening entertainments, theatres, and so forth, even if this has to be made up for by a percentage. In any case the travellers must in future produce more tangible evidence of their activity.

. . . I will try my utmost in Magdeburg. I cannot well go to Chemnitz, and would rather send someone from home specially, preferably Franken, as a test of what he can do . . .

Alfred Krupp's burden grew steadily heavier with the extension of his Works and the growth of the industrial community in his charge. But two burdens weighed hard on him in the later 'fifties. The effect on his Works of the general business and industrial depression he kept at bay in his usual fashion as long as possible—unfortunately too long in most cases—by stock and emergency work. It seemed to him treachery to send away a workman, so long as any alternative remained, but his alternatives were frequently no remedy at all in the eyes of his collaborators, verging at times, they thought, on economic suicide. But he would listen to nobody. The consequence was serious financial difficulty: unfruitful accumulations of half-finished articles, and projects—such as the giant hammer " Fritz "—begun when work was lacking, burdened the concern like a leaden weight. And he still had to carry the entire burden alone—this was the second trouble which weighed him down. He still had no responsible collaborator, however faithful the servants whom careful selection had gathered around him. His wife, with whom he would have been glad to forget his cares, was too often absent, and was but ill-suited to the noisy activity of the steam-hammers and melting-furnaces which surrounded their home. Since the birth of their first and only child, she had suffered from a weakness which called for indulgence, and compelled her to spend months under medical treatment in Berlin or at watering-places and health-resorts. Her hard-working husband, with his hatred of ostentation, loathed these places, although his first nervous breakdown in 1855 compelled him to spend months recuperating at Pyrmont. But nothing could be done against medical advice, and he had perforce to put up with long periods of solitude in the house in which he still lived in the utmost simplicity amid the clangour of the Works. Some of his finest and most humorous letters remain to us as the fruit of these lonely hours.

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[1] Carl Meyer, formerly a bookseller, entered Krupp's service at the end of 1854 as a traveller, and was soon his representative in Berlin, and from 1874 a member of the Prokura. He gave up his position in 1881.

Undated, apparently during 1857.

KRUPP *to* ADALBERT
ASCHERFELD.

My satisfaction over the fine orders is being spoiled once more by the news of breakages of tyres, and of the inadequate attention to the Mosel axles. I have written to Herr Topp at greater length about it, and he will talk over details with you, and also about the very considerable order for musket-barrels.

Now, however, there is another matter I must mention. I remember that a relative of yours—Herr Pastor, Jr., who is in Austria, has frequently visited you and stayed with you. This gentleman now wants to set up a crucible-steel factory in Hungary, and is coming to Essen with that object.

I need say no more to you to put you on your guard respecting conversations and questions, visits to the Works, and everything of that sort. He is trying also to get suitable workmen.

The information is so definite[1] that no assurance to the contrary would shake my conviction of its truth. So if he comes, I should, in your place, tell him openly what you know, and in these circumstances not offer him my hospitality. We should undoubtedly have good cause for offence if the General Management tried to trick us in such a manner.—Please do not breathe a syllable of the difficulties of manufacture and of the many specialities, for if you do not mention them, they will not be guessed at, and then the Austrians are welcome to try with the means they have. I hope that Herr Pastor, Jr., will not come, as he would be paying you a poor compliment with every request. And if he comes, he will do well to go away again at once.—

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[1] Marginal comment of Ascherfeld's : " So definite that no assurance to the contrary would shake his conviction of its truth—and *nevertheless* he was deceived by his informant."

The information has really annoyed me very much.

Once these gentlemen negotiated with me ; it was the tyre patent that was then principally in view ; now they want it more cheaply—but they are making a big mistake.—

Essen, undated.
Probably 1857.

ALFRED KRUPP *to* BERTHA KRUPP, BERLIN.

Thursday midday, 1 o'clock.

Dearest Sweetheart,

Half an hour before luncheon I happened to come here into my study, saw a piece of paper and thought of you.—Hence these few lines, which, however, will probably have no successors during the next week, as I shall be engaged and obsessed from early till late. To-day Noback is probably coming for a few days ; to-morrow two railway men from Hanover, Tuesday Orges[1], Thursday Otto[2]—these have been already announced, and by and by the unannounced will come as well.—Yesterday evening I dined sumptuously with Ernst Waldthausen and his wife, and have to send you their cordial greetings. I hope that good news from you is on the way, and that you are doing thoroughly well. It is regularly hot here again—it has only rained once since my return, and that was but little. I hope it is the same with you, and then it does not matter that you went so late ; on the contrary, if *your trouble remains cured*, about which you ought to get assurance, then I would propose that you should take advantage, as long as at all useful, of the proved salutariness of the spot and of the treatment, if, that is, it gives you good results, and I again suggest every prudent precaution and care, so that you need not be in doubt about the progress of the treatment, and live all the time in the consciousness that every day brings you a little more strength. Then you will also have good reason to be always pleased with yourself, and from this your health will again benefit.—I have nothing more to say to you for to-day than that I received your dear letter yesterday and am longing for another.

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[1] Colonel Orges, of Brunswick, had made experiments with Krupp's guns, and written enthusiastically about them in the technical Press.

[2] Otto Eichhoff, a cousin of Frau Krupp.

May you all fare excellently *bien.*

Your true ALFRED.

Essen, 28.3.1857.

KRUPP *to* ERNST WALDTHAUSEN, ESSEN.

Simply in order to avoid misunderstanding for the future, I am answering your letter with the frankness of a friend. When you wrote that now I shall presumably have no objection to your talking from time to time with Herr Topp about financial matters, I replied at once that this, of course, could only please me. The utilization of your advice is, indeed, a stipulation in the interests of the business. But you went on to say that you " would like to introduce a different system into the financial arrangements," and my subsequent written reply to that was quite fitting, as you had already forgotten my verbal declaration that I will not concede any powers to anyone in that matter, and the reasons I gave. The scope of the business may increase, and all sorts of capital requirements may come, and alterations and improvements in financial matters may seem advisable ; but all this makes no difference to the fact that I could not accept in silence the repeated reproach from you for not granting you powers or your declared intention to exceed your authority, both of which were contained in the above statement, and, as my friend Ernst Waldthausen, for whom I feel affection on account of his disposition and whom I esteem for his qualities, is too much accustomed, wherever he intervenes, to take the reins into his own hands, I think that I should not let the opportunity pass without once for all expressing myself somewhat decidedly. The advice asked for is all that is required. For the rest, the thing that wants thinking over is how to avoid, as far as possible, going to the bankers for assistance in excess of reasonable limits, at all events systematically. So thinks and speaks your sincere friend

ALFRED KRUPP.

Essen, Easter Sunday, 13.4.1857.

KRUPP *to* C. MEYER.

To-day is my first chance of writing to you, on my return from a little tour. I am very delighted at the continued goodwill shewn by Herr v. Humboldt. I have often racked my brains about the reason for it, and find it much easier to understand why so many highly-placed people *cannot* bear me. I do not want Herr v. Humboldt unnecessarily to lose any of his valuable time, which belongs to all, in conversation with you or in replying to me; and I shall not write again, so as to save him the reading of a letter of no importance. If Herr v. Humboldt really wants to give me his portrait, as you intimate, a long-cherished wish would be fulfilled by my possession of a *true* likeness (for I have in vain sought for one and only found altogether inadequate counterfeits, which present nothing approaching the image I see of him with my eyes closed); but the present from *himself* is for me a distinction, which no other—none from any prince in the world—can in my opinion equal. The picture shall be placed here over my desk to rejoice my eyes and heart daily; whenever amid the changing events and moods I feel depressed, it will fortify me, and at times of success the example which it portrays of rare modesty and humanity will warn me against presumption.

Herewith is the suggested letter to the King, as follows:

"With most profound submission I venture to request your Majesty to deign most graciously to contemplate, in a picture of my Crucible-steel Works, the development of an industry which, formerly belonging exclusively to England, has now attained in our Prussian fatherland, under your Majesty's Government, with the blessing of God and of peace, a position of assured independence and a gratifying measure of recognition. With thanks and humility, in the happy conviction that exalted care for the country's weal does not exclude sympathy with small things, I bring this success submissively to your Majesty's most gracious knowledge, and join thereto the desire, as bold as it is heartfelt, that sooner or later the great happiness may sometime be accorded me of being allowed to display before your Majesty on the spot the activities portrayed in the picture.

"With deepest respect, &c. A. K.—"

One thing strikes me in connexion with this, which I must express to you and about which I ought to leave you in no doubt. It undoubtedly often happens that, in approaching high and all-highest personages, there is a desire in the background for some distinction or other. I *in no way* cherish any such wish, and I should much regret any such assumption about me. The consciousness of knowing myself to be regarded with goodwill by the King, without any marks of it for the public, is the Mount Everest of my personal desires. For the *Works* I want *employment*, so that as soon as possible we may occupy 2 and 3 thousand people instead of 1200 ; but this wish has no connexion with *this* address. The value of the work, impartially considered, must bring us work ; no patronage of any kind ! How long will the administration of the State Railways still persist in taking no account of what we have done? For ever, I think, seeing that the condition that secret processes shall be revealed which have been developed since the time of my father at a cost of $\frac{1}{2}$ million in losses and experiments, cannot be fulfilled if work is to be kept. The secrets are our capital, and the capital is squandered as soon as they are known outside. Industry is now-a-days a field choked with speculators, stock exchange Jews, share swindlers, and such-like parasitic growths, who are content to turn to profit the first thing they can lay their hands on, in order to sit in their easy-chairs and exploit labour and intelligence to serve their pockets by means of joint-stock companies. We will rather renounce supplying the Prussian State Railways, if this can only be done at the price of allowing our process to be examined. Foreign countries make no such demand ! And in how gratifying a way they give us work ! The orders from France and

England imply indeed no small recognition, and, considering national pride, the most impartial. Who would believe that in one month of this year we have delivered to France—as well as to one single Austrian company—goods to a greater value than we have to the Prussian State Railways during the whole of their existence? During Jan., Febr., and March, the Works have delivered 300,000 thalers'[1] worth to Austria, France, and England.

You may make free use at any time of what I have written to you in this, if any one is concerned to know my opinion.

With kind regards.

P.S. If Herr v. Humboldt asks about the Essen Hospital, to which the King gave the first bed, you may say that it now has 50 beds and performs great services. That bed was a gift in return for the gun, and as the King did not want to accept the gun without payment, we found this solution thanks to Herr v. Humboldt. The Duke of Brunswick was not so generous-minded; I expected no recompense for the gratuitously supplied 12-pounder, but, since he was himself present at the tests, I might well have been granted a word of acknowledgment. The King of Hanover, too, who would on no account have the gun for nothing, bargained about the price of 1,500 thalers, and offered 1,000, *but did not pay*. In that instance, moreover, I had the mechanism of the mounting and costly firing tests made at my expense, and have up to the present received nothing, not a word of acknowledgment. I shall make no ceremony about accepting an equivalent gift in both cases, and if you should happen to be asked in Brunswick or Hanover, then merely say that I am very fond of thoroughbred riding-horses, nor would I despise a fine pair of carriage-horses for my wife; that is something tangible, from which one gets pleasure daily, and more solid than little crosses and stars and titles and such-like cheap goods. Should you arrive in Brunswick and Hanover before Thursday and Friday (as to which I shall hear further from Herr Topp in the morning), then you can tell Colonel Orges and Gen. Pfannkuchen, and other officers who are interested, that the 60-pounder Russian gun will be finished on Saturday, and can be seen on Sunday. Please note that I particularly desire a communication of this kind to be made, so as to remind Brunswick and Hanover of myself and of the guns, and further, that I shall propose to Russia a trial of crucible-steel projectiles, which will not go to pieces on iron like iron ones, but, owing to their weight and solidity, will pierce iron, and will perform most excellent service against *batteries flottantes* (ships covered with iron). The proposal must get through to the Emperor.—

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[1] £45,000.

Herr Topp will write to you to-morrow about the invoice for the Russian gun, and anything else he may have to say. I shall probably not write you another long letter like this until next Easter Sunday.

Undated.

ALFRED KRUPP *to*
BERTHA KRUPP.

Early Monday (probably autumn 1857).

Dearest Berth,

I have only a minute for writing. The General[1] is here, and will stay to-morrow and perhaps the day after as well.

For to-day I beg you most earnestly not to look gloomily at the future and so do yourself unnecessary harm. If you have been patient for years on end, you can add weeks and months to them, and if a little recuperation is still necessary from time to time at present, why, that is nothing very terrible ! You will have an opportunity of seeing Berlin and your Mayer[2] again. The General seems to be very satisfied. I will tell you more later.

Fritz is very jolly in the house. He does not care for going out ; he says " *ça m'ennui.*"—

Nothing more to-day.

Your OLD MAN.

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[1] The Russian General F. Ed. von Todleben, who came from Wiesbaden to visit Krupp, and at Krupp's invitation returned in November with his family and servants (see letter to Krausnick of 6.1.1858).

[2] Mayer (not to be confused with Carl Meyer, the Berlin representative of the firm) was the medical man who treated Bertha Krupp in Berlin.

Essen, 15.12.1857.

KRUPP *to* MEYER

My request regarding Herr Nowotny, that his requirements should be ascertained, in order then to see what can be done here, shews my intention of coming to an agreement. Your statement that to fail to agree to a *particular* exception in the most important order (which calls for a minimum of 1,500, reckoning everything at a bottom price) is flatly to refuse any agreement at all, is one more of the superficialities of which you are so fond. Your quotation of Werner's offers does not, to begin with, provide evidence that he is prosperous and is not selling so cheaply out of need. . . . The information you send is very welcome and necessary to me ; but as for the conclusions to be drawn from it, I will form those for myself ; in dealing with customers, I only make the condition that I shall be represented, in statements and offers, always in my own way and with my own opinions—and not otherwise.

N.B. It is precisely my wish that a part of the total should consist of waggon-tyres, and I therefore look upon 1,500 as a small number even for Herr Nowotny. You need only read my letter out to Nowotny, and that will represent me better than the view which you express.

Essen, 4.1.1858.

KRUPP *to* ALEXANDER VON HUMBOLDT.

Your Excellency

had the great kindness to charge Herr Baedeker with most friendly messages to me here, and thereby assured me afresh of your kind remembrance of one of the humblest of your admirers. My gratitude for this compliment is as deep as my consciousness that it is above my deserts and my desire to be able some day to lay some claim to such flattering consideration and to the position thus assigned to me, whereas to-day, with my profoundly-realized insignificance in face of intellectual eminence, and in my humility, which has, God be thanked, not altered with the change of external conditions, I feel almost as much ashamed as exalted and stimulated. In this mood and with such a conception of my position,—merely out of fear lest I should, if only for a moment, disturb your Excellency in your noble activities, to the detriment of a world which looks for your bounties,—I have hitherto suppressed my lively desire to express fervent thanks for your gracious letter of 20th April last ; thus encouraged, however, I venture to-day to intrude myself with a lengthy communication, begging pardon of your Excellency and of my competitors for your favour and leisure. . . .

Your portrait, that kindly gift, stands above my worktable. It shall there act as a constant reminder of a rare instance of selfless and pure philanthropy, self-sacrificing and tireless energy, and success achieved, and serve me—although in such a humble sphere—as an example inculcating energy and endurance. Having chosen a completely retired existence, divided between business and domesticity, having a sincere contempt for all the ostentation of public and personal distinctions, and having no further ambition than the desire to reap the comforting consciousness of duty performed and success achieved, the portrait of your Excellency, conferred upon me in my obscurity, is the solitary personal distinction, as well as the highest, that I could ever wish to have. Your Excellency can gauge my gratitude thereby.

Regarding our activities here, I will permit myself to add a few words. They consist principally in the manufacture of axles and wheels for railways and steamships. Alongside these appliances of peaceful intercourse, those of war—guns—are also provided for. The ideal is the highest degree of indestructibility ; in the former case, for furthering the safety of property and human lives, in the latter for increasing the capacity for destruction. The former assumes the leading position, and must provide our living. The latter I cultivate at great sacrifice, in the interests of progress, and this work will not achieve a value in my eyes until I can serve the fatherland with it in time of need. For the blessings of peace, however, I gladly renounce such an opportunity for proving what a home industry can do, as well as my pride therein.

The present evil time for industry and transport has not affected my establishment. 1,200 workmen, with their families, in all 3,000 consumers, get their daily bread. I hope to double the number. The really exceptional perfection of crucible-steel production which has been attained here finds the most satisfactory recognition in the orders which reach the Works from all countries of importance as regards transport, not excluding France and England. To this recognition, the Prussian State Railways persist unchangingly in being an exception, and their total orders in the past year did not reach the necessary minimum output of a single day. I have had to seek the means for the employment and nourishment of my people, for the most part abroad among the natural enemies of my industry, and how much more difficult must it not appear to achieve success there, when there is no right of appeal to the first authority in one's own country! Nevertheless my courage has not failed me. The good cause has conquered. The Works are flourishing in independence. I do not complain. I only want to shew your Excellency, truthfully, in view of your interest in my prosperity, how the sky of my good fortune holds one heavy black cloud. My mind is easy in the consciousness that royal disfavour has no part in this disdain, and I have hope in the old law that sooner or later right will prevail.

Now at last I will close. First, however, my dear wife requests that she may be recalled to your Excellency's friendly remembrance. Pardon the long letter.—With our most cordial united regards to your Excellency, I beg that you will continue to be favourably disposed towards me, and remain . . .

Essen, 6.1.1858.

KRUPP *to* EQUERRY KRAUSNICK,
DÜSSELDORF.[1]

I have not been able until to-day to send you our best wishes, which, I hope, do not come too late. I shall be glad if we can see one another very often and get a lot of time together this year. If I could have got away, I should have been to Düsseldorf already to see you, and I am keeping my first free half-day for the purpose ; and let me say again that, whenever you have nothing better and more pleasant to do, we shall be delighted to have a visit from you at any time. You can never come inopportunely, and never so that a lodging for the night—modest, it is true—is not waiting for you. . . .

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[1] Krupp had probably got to know Krausnick in the train of Prince Karl Anton von Hohenzollern, who, living in Düsseldorf as Divisional Commander, at times visited the Crucible-steel Works from 1853 onwards.

The timbering of the roof of my riding-track has to-day been completed, and to-morrow the roofing with boards will be begun ; on this roofing-felt has to go. I should have liked to use the track yesterday, as the north-east wind was so cutting that I had to put off my ride. To-day I have been galloping about for an hour on a heath close by. That is what Wolf likes best. Pelham is not suitable for me, nor for hills and valleys. I ride him very seldom. For General Todleben he was excellent, and on the track—on sand—he will again be very good for him. But he must only be ridden a little and not every day, because of a weakness in both hind fetlocks, which I noticed right at the first, but did not mention until to-day, because I hoped it would pass off. I am telling you this, not for you to worry at all about it, but only to obtain your permission to resell him when occasion offers. When the General has ridden him again, I should be glad to exchange him for another horse. Please do not, however, write to me about it, as it is a matter of entire indifference to me if I have to lose substantially on the sale. He pleased my honoured guest, the General, who did not notice the trouble with the fetlocks.—Otherwise the horse is so good-tempered and quiet that I shall not find another which I can offer him with such confidence on his next visit. When I have the track, I must see about getting one or two big, sound young horses, of Wolf's sort, as I have mentioned. I want to sell the bay, and to see about one or two more to match a recently bought big 5-year-old horse, raven-black, or rather with a sheen of blue, so that, even if one of them is not well, a pair of blacks will remain complete, and all three, young and broken-in, can take turn about for the groom's use. You will say that I am becoming luxurious. Well, yes ! But it is my only luxury. I now get real pleasure out of horses, and shall perhaps treat myself to something more, as well as stables and coach-house as may be advised by an authority—if, that is, you will provide him for me.

My wife is unfortunately still unwell, and will, I expect, be going to Cologne again one of these days to consult a medical man. I may accompany her, perhaps coming to Düsseldorf on my return and staying there for a night, but this is hardly likely to happen for another week. Perhaps I shall have to order some carriage-harness from the successor of Herr Hauer there ;—but first I will see about getting the horses. You will now, I suppose, be busy in your riding-school. If I lived in Düsseldorf, I should often ask permission to look on. I am afraid that nothing will come of our hope of staying in Düsseldorf for some time during this winter. For the very good reasons that my wife is not well enough and that I have such a terrible lot to do. I spent all the recent holidays at the desk in my study until late in the evening, and again to-day.—

And now accept our best wishes.

Crucible-steel Works at
Essen, 7.4.1858.

KRUPP *to* VON DER HEYDT, MINISTER
OF COMMERCE.

Your Excellency,

I take the liberty most obediently to submit an account of the principal productions of my Works, shewing the progressive development which has taken place. . . .

For the steamers of the Rhine, Danube, Elbe, and the ocean-going ships of the Austrian Lloyd, I have for years been supplying all the shafts to replace broken iron ones, and those required for new ships. In Austria and Bavaria, the general managements of the railways have already prescribed the use of my crucible-steel tyres, in France and England the most important lines have introduced my tyres and have been so satisfied that they have opened negotiations for considerable deliveries.

The advantage of employing these shafts and tyres has been proved by many thousands of instances ; the tyres cost, when their long life is taken into account, only half as much as iron ones ; the axles for locomotives and waggons, which offer such advantages from the point of view of economy on account of the limitation of weight, the reduced friction, and the saving of oil which they permit, as well as the unchangeable value of the material, have without exception proved, on a large scale, that they, and they alone, provide complete security in regular traffic against fracture, bending, heating, and the resulting accidents, and that the material made here is always pure, uniform, and flawless, whereas of the few similarly-named (unhardened) (crucible-steel) axles from other sources, the latest official statistics actually shew two as having broken, which demonstrates that it is not the name but the source which carries the guarantee, and that the well-earned reputation of our product here can easily be endangered, without any fault of ours, by inferior brands, which do not deserve the name of crucible steel.

I close this obedient statement by expressing the most sincere regret that, in contrast with the interest which has been shewn in other quarters, and with the encouraging way in which our activities here have been animated by orders which are substantial although insufficient to keep occupied the necessarily extended plant, it is precisely the Royal Prussian State Railways, for the service of which—and preferentially, so far as circumstances permitted—my efforts were originally intended, which have *to an inexplicable degree disregarded my establishment and all applications for work.*—Whilst I considered myself bound to offer the railways of my native land the first fruits of the progress attained, I have constantly been refused and put off ; I have therefore lacked the natural support of being able to refer to recognition accorded by the most important institution of my native land, for which reason my offers abroad have been made under no small difficulties. I had to turn to more distant users, if the invention and my undertaking were not to fail, and I can hardly attest this more clearly than by the illustration that up to now *the Royal Prussian State Railways have not taken one half per cent of all the tyres manufactured.*—In the past year, only the Lower Silesia & Brandenburg Railway ordered the small number of 8 tyres, and this year the Westphalian 4 tyres.—

The total receipts for supplies of crucible steel to the whole of the State Railways in the past 2 years does not amount to so much as would pay the wages of my workmen for 3 days.

If, now that these circumstances have been brought to your notice, your Excellency should feel moved to grant some recompense for the trouble and sacrifices of starting such an important new industry, I venture most respectfully to repeat my request for work, in the supply of tyres for the State Railways.

I have the honour to remain, your obedient servant . . .

Essen, 12.12.1858.

KRUPP *to* C. MEYER, BERLIN.

You will have no need to make excuses if in future you act and speak according to instructions and with reflection. Lapses from this rule are not made good by phrase-making, and all your excuses merely make me regret that trouble and time should be so unnecessarily wasted in pure logic-chopping. In exculpating yourself for an uncalled-for statement to Hesekiel, you have not hesitated to assert that he was not telling the truth, and yet you admit that you gave him information about the possibility of a reduction of price to 30 thalers. That is exactly what should on no account occur ; and it was just as wrong of you to mention, in this same reply of yours, which was intended to be seen by Hesekiel, that you had been authorized to sell 2,000 tyres in Bavaria at 30 thalers per 100 lbs., as this possible exception was not for publication. You knew this ; verbally and in writing you have been told that you are not to depart from the price list, that no scale of discount is to be laid down, that users should state the figure of their requirements and that any exceptional treatment that may be desirable will be offered from here. In the letter dealing with your assertion against Hesekiel, you still cling to the statement that you meant old weight,[1] but that in no way alters my view or your lapse, and all I have gathered therefrom, as also from the plump accusation against Hesekiel, is that you intended to protect yourself at any price.[1]

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[1] The Prussian pound was altered in 1858 from 467·711 grammes to 500 grammes.—Translator.

Your letter from Munich will be answered from the office. In conclusion, I have only to add the expression of my wish that in future you will no longer rely upon verbal concessions, but adhere purely to the written word, that you will use your power of accepting orders on the basis of the fixed prices and not make exceptions at will without having special authorization in the particular case. If you go to work with thoroughness and deliberation, then, with your abilities, you can give me satisfaction, but I must emphatically request that you will, once for all, not again give me cause to write a similar letter to this.

Crucible-steel Works at
Essen, 19.1.1859.

KRUPP *to* FRIED. KRUPP
(HEINR. HAASS), PARIS.

With reference to my communication of to-day, I want to give you some interesting information about the construction of a giant hammer,[2] with which I am at present occupied.—It has a weight of 50,000 (fifty thousand) pounds, and a height of stroke of 10 (ten) feet, and thus produces a moment of 1,250,000 (one and a quarter million) pounds; its anvil weighs 2,000,000 (two million) pounds.—It is by far the largest hammer in the world, and is intended for forging blocks of crucible steel up to 50,000 (fifty thousand) pounds, e.g., for monster shafts and similar massive objects. As one of the latter, I will mention, on account of its unusual nature, a monster gun with a bore 13 inches in diameter and 15 feet in length, which I have designed by request in accordance with the enclosed sketch, for the floating batteries of a State which does not wish to be named.[3]

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[1] In spite of these and many similar reprimands, Krupp's confidence in his Berlin representative remained unshaken.

[2] This was the projected hammer "Fritz"; the weight of the tup was afterwards doubled.

[3] Russia.

Although, as in the case in question, I still pay some attention to guns, I must mention that, generally speaking, I have a wish to give up gun production. In itself, it is not particularly remunerative, and in the manner in which I have hitherto carried it on, being limited to the supply of a few samples for test, it is quite without advantages, as well as troublesome.—The Viceroy of Egypt has already had 26 guns from me, and Prussia also, as I am informed, will order 18 6-pounders within a few weeks, but this does not in the least come up to the expectations which I have been led to form from various quarters and particularly from France.—The prospect of finding compensation in bulk deliveries for the sacrifices involved in supplies made one at a time has alone induced me to maintain the gun production until now, seeing that my original intention was to drop it when the object, of proving what the Works here can do, was attained, and when confidence in my tools for use in the arts of peace, the manufacture of which is the proper occupation of my Works, on which we find full employment, had thereby been increased.

Since, however, I have every reason to believe that France is putting you off with empty verbal promises, not even written ones, since the Government does not even see any reason to report on the results of the latest tests, and since, as I am informed, they have just procured rifled bronze guns for 80 batteries, it would be foolish if I did not prefer in future to direct my attention exclusively to a more profitable activity, the production of crucible-steel tyres and crucible-steel shafts and axles for sea-going and river vessels, railway locomotives and waggons.—

In conclusion, please secure information as to the size of the largest hammer at Creuzot's, since I should much like to know how small it appears in comparison with the one mentioned above.

The year 1859 was the turning-point in Krupp's development into a gun-manufacturer—a turning-point in his human development also. The death of his proxy Topp, and of his old and intimate friend Sölling, not only deprived him of two strong supports in his work, but also of two tried friends, on whose shoulders he had been accustomed to unload many a business and personal worry. Years passed before he could feel that he was again responsibly represented in the business, and he was justified in writing in a letter to Meyer during this period. " In my absence there is no one there who can deal satisfactorily with enquiries." Only gradually did he train up further colleagues in management. This period, however, made him more independent, more decided, as well as more lonely. In a few intelligent officers, such as Colonel Orges of Brunswick, General von Voigts-Rhetz and Major Neumann of Berlin, who understood and appreciated his achievements in gun-construction, he also found new friends ; in general, he had in his gun-making once more to look abroad for recognition and support, in order to overcome the strong resistance of the Prussian authorities to any sort of innovation. Krupp's most powerful support in introducing the crucible-steel gun into Prussia was the Regent, Prince Wilhelm, who, moreover, personally decreed an order for 300 rifled six-pounders in 1859. With this began Krupp's rôle as a gun-manufacturer—at first with more fame than profit ; the necessary income of his growing concern had still to be drawn from the manufacture of steel for railways, shipbuilding, &c.

Düsseldorf (undated),
beginning of May, 1859.

KRUPP *to* CARL MEYER.

Your report of 4th has come to me from Essen. If the State needs guns, I will do all that I can to comply with the wishes of the Ministry, and I am confident of my power and am determined to produce surprising results, if I am convinced beforehand of the utility and necessity of my efforts. Before Prince von Hohenzollern[1] left here, I gave him assurances on the subject. Apart from this brief general assurance, which you may give, I beg you to refrain from any verbal negotiation unless requested from here, and to leave it to General Voigts-Rhetz[2] to ask the firm of Fried. Krupp in writing (as previously done in the case of supplies of this kind) for any further information. Moreover, I have no verbal remarks to commission you to make respecting the indispensability of the men released for service,[1] and can only repeat, in the sense of my written declaration to the Ministry and of my further more detailed argument in two letters to Major von Gellhorn, of Essen, that I have not said what is untrue, that the men specified are skilled in melting and pouring and cannot be replaced by others, and that I cannot deliver a single gun if these men are taken away from me.

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[1] Prince Karl Anton von Hohenzollern took over the Premiership on 6th November, 1859, and on 2nd December the presidency of the Prince Regent's Council of State.

[2] Konstantin Bernhard von Voigts-Rhetz was appointed Director of the General War Department in 1859.

I intend to remain here at least another 3 weeks, for my health, so that, if the General should wish to honour me with a visit, it would be desirable that it should be put off until after my return, as in my absence there is no one there who can deal satisfactorily with enquiries relative to the capacity of the Works in the event under consideration. If I am wanted for an *urgent* discussion I will gladly come to Essen to receive the General there. Only the arrangement must be made beforehand, perhaps by telegraph, lest his visit should occur in my absence from here on certain trips which I have in mind. I am very glad that you are in good health.

Düsseldorf, 20.5.1859.

KRUPP *to* CARL MEYER.

I have at once passed on to Essen your news that the order for 312 6-pounders has been settled. Assuming that all is now clear, that it is understood that the guns will be supplied, as specified, with no more than the rough external finish described in detail in the tender (as distinguished from finishing to dimensions), and further that it has been decided whether the really superfluous, *expensive* spindles at the muzzle (which add 30 thalers to the cost) are to be included or omitted, and that we keep the necessary indispensable skilled men, this order shall be executed with real pleasure and with all our might. So long as it is only a question of supplying 6-pounders, which require smaller castings than 12 and 24-pounders, we have less need of the men formerly described as indispensable, and the reduced list will follow within the next few days. For the same reason for which the Prussian guns have not hitherto been made generally known by lithographs, I beg you not to speak of the nature of this order, and if you are asked about it in other quarters to say that the design of these guns is a State matter. If Prussia is equipped and the design is known, if we cannot prevent it, then other States may follow, and if we may then accept similar orders for other States, it should be in the first place for friends and allies of Prussia. Then, however, a reasonable profit must be a condition, and there can be no question of stating *this* price.

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[1] On mobilization, certain workmen of the Steel Works had been claimed to be indispensable.

If, as can apparently be assumed, the order has now been really decided upon, you may now tell General von Voigts-Rhetz that, from the time that the order began to appear probable, I have been arranging everything for rapid fulfilment. While many complaints of delay in orders have been made by railways, I have recently been having castings made for these guns at my own risk. To-day there are enough ready for a hundred guns, and in 6–8 weeks the whole will have been cast. On the day when the formal order arrives, all the hammers will be ready to get to work. In these circumstances, seeing that the bankers are at present in such difficulties, it may be permissible to ask whether the War Office would now be inclined to assign me a credit for 100 thousand thalers[1] at the Royal Bank, payable at, say, end of July or August, so that I can draw upon it by bill of exchange. I have preferred not to propose the normal condition that half payment shall be made when placing the order, to cover advances ; in the manner suggested needs would be met, and the payment at those dates would hardly be an advance, since by then the approximate value would have been put into the work, and I shall have had by then to meet practically my entire expenses for the whole supply, as by then the castings will all have been completed.—

Let me know about this on your visit to Essen, for just now, when the Cologne bankers, as it seems to me, have lost their heads over war scares, when the Schaaffhausen Banking Company, and even Deichmann & Co., with whom I turn over many hundreds of thousands yearly, have informed me of their anxiety and have expressed the wish that I should not draw on them at long sight, I want to spare these gentlemen any acceptances, and on this account I should be glad if the War Office proves to be ready to do as suggested. If the Ministry of Commerce and Industry did not reward my sacrifices for industry in the way it does, owing to the animosity of the Minister, v. d. Heydt, if I had not had 600,000 thalers' worth of tyres for waggons, &c., partly finished for stock during the crisis, in order to keep all the men in full employment (the tyres could be used up by the State Railways on the spot, were it not that they, alone among railways, ignore the progress we have made, and would apparently be glad, if they could, to ruin my establishment) ; if our own Ministry would only deal with my establishment justly and in accordance with the country's interests, not treating us better than the foreign competitors of our industry, but conceding us just as much *deserved* preference (quite apart from the obligation of recognizing, protecting, uplifting an industry whose struggles to establish itself were attended by such sacrifices, and which has always been preferentially devoted to patriotic service) ;—then, in the real interests of the country, I should long ago have had to supply the State Railways with tyres to the value of many millions, then the stock would not be lying there, but instead of it I should have had its value in my hands and should not have needed to importune the War Office ; on the contrary, I should have desired to supply a thousand guns without asking when they would be paid for. For the rest, you need make no secret of what I have said, if it is of service in explaining my wish. . . .

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[1] £15,000.

Essen, 13.10.1859.

KRUPP *to* GENERAL v. VOIGTS-RHETZ,
DIRECTOR OF THE GEN. WAR DEPT.

I must not omit to express my sincere gratitude for the goodwill which has again been shewn by the short shrift given to the attempted disparagement by my rivals of my supplies of guns for the State. . . .

I also thank you most cordially for the other intimations respecting your benevolent intentions in the interests of my Works ; I fear, however, that, so long as the Minister von der Heydt is in office, the patent on my invention, i.e., the extension which I requested for crucible-steel tyres, which I really must have to ensure that the expensive plant for manufacturing them shall be profitable, will be persistently refused me,[1] because the Bochum Works are to exploit my invention ; the State Railways, too, will be obliged, contrary to their own interests, to continue to avoid my Works, as v. d. Heydt wanted my establishment never to prosper. . . . Although he has not succeeded in this, he has nevertheless neglected nothing to make me seriously regret that I did not exploit my inventions abroad years ago, and if I still have to adopt this course, no one but the Minister v. d. Heydt will be to blame.—

I ask your pardon for having strayed so far on to such unpleasant ground. If, however, any opportunity occurs of making use of these remarks, I beg that you will remember that I take responsibility for all that I have said.

On this occasion I venture once again—in conclusion, but as the main object of this letter—to bring most pressingly to your recollection my former invitation, and the assurance which you gave me of your readiness to utilize a couple of free days, at a convenient opportunity, to see over my Works. Looking forward to this pleasure, and with the assurance of sincere respect, I subscribe myself. . . .

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[1] A request, made to the Minister of Commerce on 3rd June, 1859, for extension of the tyre patent, which had been granted for only 8 years, had been refused.

Essen, 24.10.1859.

KRUPP *to* C. MEYER.

. . . Prince Wm. of Baden[1] has announced that he is coming here on Thursday or Friday, and in addition other visitors will perhaps fill the guest-house,[2] and you would then have to find Herr Nowotny a good lodging in the town. If you were here early on Thursday, or at latest early on Friday, to see a big steel casting in the morning, and on Saturday an iron casting of 2,500 cwt.—Then I should have to ask for previous notice, in order to get his room ready. He can then also see a number of guns bored.

We should then no doubt get some remarks from him on the comparison with double-ended boring and on external finish.

I have given a most pressing invitation to Lieutenant-Colonel Neumann,[3] and I believe this visit will be very valuable and of critical importance as regards his views, convincing him on the question of gun manufacture up to the largest dimensions.

Perhaps he will see enough to enable him to recommend the visit to General von Voigts-Rhetz with conviction.—As you know, the condition stands that the invited bring no *uninvited* guests, as the confidence which we are placing in these few guests, as an exceptional measure, is confined absolutely to them, and nothing would be shewn if any uninvited person were to come with them.

Of course the Lieut.-Colonel will stay with me.—

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[1] The Grand Duke of Baden was much interested in the crucible-steel gun just introduced by Prussia.

[2] The guest-house had just been built, in the garden grounds of the Works.

[3] Lieut.-Col. Neumann (later General v. Neumann) was one of the best members of the Artillery Testing Committee, and, along with General Encke, the most powerful influence in bringing about the introduction of the rifled gun.

Essen, 30.10.1859.

KRUPP *to* C. MEYER.

The news comes from Munich that Cramer Klett has persuaded Herr v. Bruck to take puddled-steel tyres for the 500 waggons, and that nothing more can be done against it. Unpleasant as this is, please do not waste a word or a sign of dissatisfaction or complaint about it, either in writing or later by word of mouth, so that it may not be thought that *we* are the the losing parties, but leave it, on the contrary, to be understood that, if it were desired to fit the next delivery of waggons with our tyres, we should welcome this opportunity of comparison as certain to be decisive in our favour in every respect.—When Cramer brought me the drawing at Nuremberg, he certainly had this intention, and himself brought me the drawing to make it plain to me. But say nothing of the sort to him or to anyone else ; we will keep this to ourselves, and make good use of the lesson. We must now redouble our efforts to procure work from all sides to make good this loss, and it is now my intention to proceed more energetically not only as regards the patent, but in bringing pressure to induce the Minister, v. d. Heydt, to employ our Works. So first we will try to win the favour of the Prince Regent through the War Office and by activity in its interests ; let us hope that the guns which are now leaving, and the fact that we have for the time confined our activities exclusively to the service of Prussia, may contribute to that end. . . .

Essen, 15.1.1860.

KRUPP *to* C. MEYER, BERLIN.

Yours of yesterday has just arrived.—I want to fire the 6-pounder on Wednesday, and cannot wait for the tedious process of sending a written request and waiting for its approval and the despatch from Wesel. Buy material for 50 bags or less in Berlin at once, wherever you can get it. Before I lose *one* day, after work has gone on day and night and Sundays, I would buy some other suitable stuff here in a shop.

I only need, as a preliminary, to have a test firing with 3 different designs, to prove the precision of the work, and then the grand tests can begin at once. I am firing smaller guns every day under similar conditions, and the system[1] is completely justifying itself.

I had heard that Colonel Graberg was shortly taking over another high command ; for that reason I did not invite him. His readiness to visit me presumably shews that that report was another fabrication—like the newspaper report of to-day regarding an order of 500 guns for England—and I shall of course be delighted if the Colonel will kindly accept the invitation. Only tell him at the same time that, apart from himself, General v. Voigts-Rhetz, and Major Neumann, nobody is invited, and that I beg that no one else may accompany them, as I do not want the knowledge of my results to extend for the present on any account beyond these three gentlemen.—

Essen, 8.3.1860.

KRUPP *to* PRINCE REGENT WILHELM OF PRUSSIA.[2]

With the deepest respect I venture to submit herein a petition to the gracious favour of your Royal Highness.—

In the existing conditions the fulfilment of the request which it contains appeared to me to be an act of justice, for which reason I applied to the Royal Ministry of Commerce on 3rd June, 1859. Nevertheless I received a refusal in accordance with a judgment within the jurisdiction of the Department.—The ultimate decision, however, in regard to my request should surely depend not only on the question of justice but also on considerations of high sovereign care for the prosperity of the country's industries, considerations of graciousness which pertain solely to the highest power in the State, and I have therefore no alternative but to take the present course of laying my petition directly and most dutifully before the throne of your Royal Highness.—

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[1] The system of a new breech mechanism.

[2] Verbal representations had preceded this document.

My establishment, which has just had the great satisfaction of having delivered several hundred crucible-steel guns for the country's war needs, and, as I understand, to the contentment of the War Office, has in so doing enjoyed for the first time the pleasure of being able to devote its industry on a substantial scale to institutions of the State, and, moreover, in a sphere which does not form part of its normal vocation.

Apart from this supply of guns for the Royal Prussian Army, which I regard less as a piece of business than as a matter of honour, I have hitherto constructed crucible-steel guns principally for no other reason than to bring to light the qualities of my crucible steel, and to turn my success in this direction to account for the benefit of the main section of my enterprise, its railway and engineering supply works.—The supply of crucible-steel tyres for railway wheels (as well as crucible-steel axles) is, in fact, the basis of the vitality of my Works, which are mainly equipped for that purpose.

The advantages of this railway material are greater strength and greater resistance to wear, and consequently, and above all, increased security, which last point has been amply proved—up to the present in other countries—under conditions of intensive traffic, and especially in the transport of troops and war material, affording a striking contrast to the troubles so regularly met with in operation with inferior material, and so much the more serious in cases of this sort.

On private Prussian railways and on foreign State and private railways, there has been extensive introduction of my productions ; on the Royal Prussian State Railways, on the other hand, they have found but very little application ;—(thus, of about 15,000 crucible-steel tyres, which have been produced here since the end of 1853, the latter have taken 266 only ; my present Works-organization is, however, already based upon a yearly production of 15,000)—and discouraging as the refusal of recognition from this quarter has hitherto been, the omission to set an example on the part of the institution with the nearest title and obligation to do so entailed a lack of recommendation in approaching other quarters, the prejudicial consequences of which have been only partly removed by persistent efforts and by my own advocacy of my product.

That the cause of such slighting of my establishment does not lie in the unsatisfactory value of my product is proved most cogently by the fact that in England, both for English and also for Anglo-Indian railways, it is already usual to specify my crucible-steel tyres, although these goods are still to a great extent handicapped abroad by heavy Customs duties.

With a proper appreciation of my invention " Production of crucible-steel tyres without welding," a patent for this process was granted to me in 1853 by the Royal Ministry of Commerce, but the justice of this is being defeated by the fact that the patent will lapse in 12 months' time, without any guarantee of a reasonable equivalent for the expensive experimental work and the enormous cost of the manufacturing plant, although compensation of this kind is the object of such privileges.

At the very moment when there have begun—quite recently—to be signs that somewhat more attention will be paid by the Royal State Railways to the product of this invention, at this very moment my invention is to be robbed of protection and become common property, its exploitation is to come gratuitously to Works which have made no sacrifice to achieve this progress, is perhaps to fall into the hands of financially-powerful joint-stock companies, as a dangerous weapon against the existence of my Works !

In the first place, then, the desired prolongation of the patent is the necessary condition of such a completion of my plant as can alone bring about a further reduction of the cost price ; for it is far from my wish to keep prices unjustifiably high on the basis of further patent rights. . . .

In the second place, the fact must be considered that, once my invention begins to be exploited by others, the pecuniary interest of the industrialists and workmen who become acquainted with it will spread the knowledge and experience of these special processes into foreign countries, and whereas at present all the requirements of such countries (and the major portion of the production of my Works has hitherto gone abroad) are met from Prussian raw materials and labour through the medium of my establishment, this economic benefit to the country would cease, and then the other Prussian concerns exploiting my invention would have to share between them the provision of the small home requirements.—

Finally, however, it is of far more importance to me that the very existence of my establishment is closely connected with the concession of the prolongation of the patent, for this concession gives me a prospect of at last paying off heavy debts incurred in developing the Works, burdens from which I could long since have freed myself if I had been ready to listen to the invitations which I have received, with dazzling promises and assurances of protection, on condition of turning my invention to account abroad by establishing similar Works there.

Without outside prompting, I have, however, of my own initiative, in the interests of our country, left such expedients up to the present untouched, and, in spite of the higher prices which could indubitably be realized, I have refused to supply any crucible-steel guns to foreign countries when I believed I could serve my native land thereby.—

The prolongation or renewal of my patent rights will, moreover, in no way injure the interests of the remainder of the industry, as my patent does not prevent any other establishment from exploiting its own manufacturing process.—

In view of the state of affairs depicted above, and particularly in view of the fact that my invention has experienced from the Royal Ministry of Commerce, and the Royal Railways, nothing but humiliating slights instead of encouraging notice (in consequence of which the purpose of compensating and rewarding, which must have been implicit in the granting of the privilege in question, has up to now remained unfulfilled), and in view also of my conviction that your Royal Highness cannot desire that an undertaking, admitted to be prominent among the country's industries, should fail to find due support in face of a danger to its further development, I venture with the deepest respect to approach your Royal Highness most dutifully with the petition :

That your Royal Highness will most graciously be pleased to approve a prolongation, for a further ten years, of the patent granted to me on 21st March, 1853, for the production of crucible-steel tyres without welding.[1]

Berlin, 17.3.1860.

General v. Voigts-Rhetz *to*
Alfred Krupp.

I only received your letter late this evening, on my return from a Russian bath, which I had been taking owing to a nasty attack of influenza. To make sure that nothing is neglected in your affair, I take the liberty of telling you briefly in writing what I wanted to have the honour of bringing to your knowledge to-day : I was with the Prince[2] this morning, and described to him quite openly and candidly the position of your affairs and your relations with the Minister of Commerce, and also expressed the request that he would himself hand the Prince Regent your petition for prolongation of the patent, and do all in his power to ensure a favourable result.

The Prince agreed at once to do it, and even came eagerly half-way to meet me, promised his good services to the best of his power, and said that he would ask the Regent to order the Minister of Commerce to report to him personally. I told the Prince, further, that you would certainly be very desirous of speaking to him about the matter, and of handing him personally the petition to the Regent for forwarding. He will be very pleased to receive you and to accept the document from you. . . .

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[1] The Prince Regent, on 19th March, sent Krupp's petition to the Minister of Commerce for report, with the following autograph remark : " The patriotic feeling which the said Krupp has displayed in declining brilliant gains in the manufacture of crucible-steel guns for abroad calls for especial consideration for his request, as well as for the use of his products by the State Railways, which appears up to the present to have taken place to a strikingly small extent."

On 14th April, 1860, the Minister of Commerce, von der Heydt, rendered the report called for, coming to the conclusion that Krupp's request should be refused. The Prince Regent, however, on 25th April, 1860, gave the Minister of Commerce these directions : " In recognition of the patriotic sentiments which Commercial Counsellor Alfred Krupp, of Essen, has frequently displayed, particularly in declining foreign orders offered to him for guns, orders which promised him substantial profit, and in consideration of the circumstances detailed by him in his attached statement of 8th ulto., I decide that the patent granted to him on 21st March, 1853, for a period of eight years, for a process for producing tyres from crucible steel without welding, shall nevertheless be extended for a further seven years only, and charge you to inform him accordingly. The enclosures to your report of 14th inst. are returned herewith."

[2] Karl Anton von Hohenzollern, president of the Prince Regent's Council of State.

As the time for action has now arrived, I will also have a talk with the Under Secretary of State of the Ministry of Commerce, Delbrück, and possibly arrange for a meeting between you and him, if you so desire ;—it would in any case be useful, and so far as I know Herr Delbrück, he is not a man of the ordinary clerk type.

In order not to inconvenience you, I am not mentioning any time when I will renew my attempt to meet you, but I should like your permission to pay this visit *quite soon*. . . .

Berlin, 1.6.1860.

KRUPP *to the* WAR MINISTER, V. ROON,
BERLIN.

Your Excellency,

I have the honour most obediently to submit the following offer, in regard to the new breech mechanism inspected by you.

Assuming that the intended advantages of the gun described in the enclosure by sketch and specification . . . will meet with recognition, it appears to be of the greatest importance that Prussia in the first place should be sufficiently equipped therewith, and the allied States in turn ; similarly, however, it appears absolutely necessary that the knowledge of this improvement should be kept from other States—France above all—as long as possible. In view of the simplicity of the system and its manipulation, the design can remain secret until the guns take the field.—The surest means, which is used in England in the case of inventions for war purposes —as distinguished from industrial inventions—that is to say, the grant of a patent under seal, would also be advisable in this instance, in which case only the persons who are carrying out the testing and construction, under oath of secrecy, will be acquainted with the details, as regards which the Enclosure contains sub II the legal stipulations,—and, for the avoidance of needless dissemination of knowledge of the subject, it might be desirable that, on the opinion of a few expert members of the Military Testing Committee alone, such a patent should be granted—for the full legal period of fifteen years—by the Ministry of State direct, through the instrumentality of the War Office, as an interested party, and that the grant of the patent should be communicated by the said Ministry to the allied States belonging to the German Confederation.[1] The patenting is necessary for my establishment as an incontrovertible documentation of my invention, and the conditions, under which I contemplate exploiting it, must—while they offer the States in question the advantage of the first use of the invention—afford my establishment the certainty of remuneratively employing the extensive plant, for production of the large ingots, which is now in course of construction. . . .

In such circumstances it is possible for me to continue the practice, which I have hitherto adopted voluntarily, of declining orders for guns, which might possibly some day be turned against Prussia, and to renounce the advantages of such orders, as well as the profit from the sale of this new mechanism in the same quarters.

I offer this patent to the Prussian State for use gratuitously; I only ask the assurance that for fifteen years at least the rough forged ingots shall be obtained from my Works for all the guns in which the design of breech mechanism here in question is fitted.

I am prepared to fix maximum prices for all calibres that may be required, for the period of these fifteen years, reserving to myself the reduction of these prices as may be practicable according to the amount of the profitable employment referred to above.

I close with the remark that, having obtained approval of the supply of guns to England, I have already applied there for the patent referred to at the commencement hereof, and expect it to be granted at a very early date, that I further contemplate, on every occasion of supplies to foreign countries, ascertaining beforehand the wishes of the Ministry on the subject, and would add that my establishment is in a position to supply in the course of the present year another 1,000 guns from 6 to 60-pounders.

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[1] Krupp's hopes were far from being realized. Neither the patent nor the introduction of his mechanism in Prussia was achieved during the years that followed.

I desire that the first of my output shall be devoted to Prussia and to German interests, and that the full amount of work which is requisite for my establishment may not in the first place be commissioned outside this circle.

In view, therefore, of the possible early requirements, as well as of my present freedom from immediate engagements, a speedy decision on the part of Prussia and an early arrangement of the patent grants on the part of all the States of the Confederation are desirable, since I consider it to be in the general interest that supplies to individual States of the Confederation should be conditional on the grant of patents by all without exception.—

Essen, 12.6.1860.

ALFRED KRUPP *to* BERTHA KRUPP.

Dear Sweetheart,

To-day I had two letters from you at once, without having written a line yet. On Sunday I slept a good deal both in the morning and in the afternoon, and yesterday I went for a ride at midday and in the evening. Frau Eichhoff is well ; I have not yet seen the old gentleman. He is, however, very well and happy. I have not yet seen Friedr. Schulz ; his wife is at Kreuznach. Uncle Schulz is well and happy. The Eichhoffs have one of your portraits, the other is framed and hanging now over my bed. I have to-day sent Friedrich to Düsseldorf to see about horses ; if he finds nothing there and those recommended by Herr Jürst are still to be had on about the 20th, I shall be very glad to try to buy them, assuming that they are strong and handsome. That loathsome Jew there had better take care never to speak to you, but he cannot be forbidden to go out of doors or to look. It is a good thing that Emmy is with you. If he should ever lift his hat, ignore it as though he had lifted it to someone else.

Now, *I* have made a better conquest in Anna !—That she should admire you I can understand, and still more that she should love you, but that she should have taken a fancy to me as well, that such a thing should still happen to me in my old age, is ridiculous, but extraordinarily nice of her.—I am delighted about it.—Yesterday I told the district magistrate about her. He and Helfer dined with me. I am glad that you have Clara there, and that she is no longer angry with me. If Otto turns out any good, he must also get to know me better. Of Clara's many good points, you might copy her calm and her plumpness.—Kiss Fritz wet for me! Clara and Emmy, too, drier but well!—I bow to Frau v. Oppen and kiss her hand with respect. No doubt you will already have expressed to her more plainly my thanks for her remembrance and good wishes. Please go to the furniture store and see whether they have some cane chairs and leather-upholstered furniture, that will go together, for the Garden House, including 4 bedsteads, so that Barchewitz and I can set it up at once. I will send a sketch of the building afterwards if it does not go with this. By early in July I hope we can use a couple of rooms, if not the whole. Barchewitz cannot hurry any more. I have forbidden him to do any painting, and told him to make the building habitable by the 25th of this month, with linen awnings in front and behind the house instead of the iron-covered verandahs, and to put off the further decoration until we are travelling again.

I am sending back to you with this the letter from Anna—dear, sweet Anna—which I have read with emotion, astonishment, and blushes. I should like it very much if she would and *may* visit us. I am looking forward to being with you again soon, but I must know definitely beforehand on what day we return; this time I cannot lounge about, and would not come if I had to return again alone. Yours for ever and a day.—

ALFRED.

Essen, 13.10.1860.

KRUPP *to* C. MEYER, BERLIN.

I see in to-day's paper that at Jülich[1] two old cut-down bronze guns, fitted with a breech mechanism, and rifled, have done so well that all available bronze guns are now to be converted in the same manner. Try to get authentic information about this.—

Longsdon has just written that Armstrong's breech mechanism has now been rejected, and for the present all guns with it are being altered to muzzle loading. Consequently Armstrong counts for no more against us than Whitworth. (Our breech mechanism is attracting great interest.—)

You might use this to open with in a call on the gentlemen at the War Office, and tell Neumann about it.

Recall what I told them here, that, when my big hammer is ready, I shall be able to supply the 12 and 24-pounders and larger guns substantially cheaper, and possibly further improved, if thousands of them have to be made.

With the previous appliances and small orders this branch of manufacture was the worst of business, but with the future plant and large scale production I hope to reduce the prices of the larger calibres by 15, 20 or even 25% for Prussia, and have based my plans and hopes principally on having done a service to the State in providing against its need. If Prussia is so equipped and so dangerous to the enemy that we undoubtedly have the ascendancy, then I have earned enough with these supplies if I earn no money from these supplies. . . .

Essen, 24.11.1860.

KRUPP *to* C. MEYER, BERLIN.

I am sending you a copy of a decision of the War Office.[2] It astounds me. Consider all the previous statements to the opposite effect. I should be glad if you could obtain an explanation for me, before I come to Berlin. The promise of good offices was only verbal ; I had the interests of the Confederation in view in this, and I do not insist upon it, but, after I have found everywhere so much satisfaction shewn with the design of the breech mechanism, it sounds to me too strange to be told at last that the War Office is acquainted with better ones. I feel that my honour is involved in getting to the bottom of this, and proving that no demand whatever can be made of a breech mechanism which cannot be fulfilled by mine, and that at most small alterations may be required within the assigned limits of the system. Let me know what it is that they find fault with, what it is that they prefer in some other system, so that I too may make the comparison and justify my conviction. Perhaps Colonel Teisler would be kind enough to tell you the details, or Colonel Graberg may also know. I am convinced that I have brought my slide system of breech closing to such a point by rapidity of service, solidity, and removal of the inconvenience of fouling, that the whole world must discover its superiority over all others, and I shall therefore take steps to secure the patents, in order in due course to benefit Prussia and the Confederation in the first place, in the interest of our great fatherland.

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[1] The old fort near Jülich was being used for firing trials with rifled siege guns.

[2] The refusal of Krupp's request of 1st June, 1860. It added a prohibition of the use of the " rifling device " of the Prussian field-guns.

So much has been asked of me in the last eighteen months, that I have at last started the construction of the large boring and rifling shops, 180′ long, 60′ wide, 3 stories. Who knows whether the moment will not soon come, when the Berlin factories will get better paying work or when war preparations may make it desirable that I should work with all my power ? Certainly nothing but rifled guns will now be wanted, and the rifling which is known to be best. Since the guns were distributed,[1] the Prussian rifling is known ; it was known before that ; now, however, the dimensions and shape are found in every war department,—England has a very similar type. So I do not understand why I am to be excluded from making such rifling, when everyone, friend and foe, is entitled to do so, and for this reason I should in any case have to come to Berlin, unless you can secure for me a declaration of official acquiescence. I have had a number of guns partly prepared, in order to be in a position to effect prompt supply, and I meant also to use them for further comparative trials of projectiles, altering the projectiles by fitting studs at the sides, thus saving lead. It was my intention to present a specimen of my breech mechanism, of course with this rifling, to various sovereigns allied to Prussia, all of whom get their guns from Prussia and who in any case all know the gun, because they were invited to the trials, and now comes this unexpected prohibition. I had sent 3 to Freund again for that purpose, but wired at once yesterday to suspend work—it has, however, as I learned today, been done. I meant to offer to our War Office, or to the Prince Regent, a 6-pounder, a 12 and a 24-pounder, free of cost. You can believe that the pertinacity, which alone I have to thank for every success, has not deserted me on such an occasion as this. I have at last entered this field, and now I am going on ; I await your news before taking further action. The bored Prussian guns in stock I intend to offer to the War Office at their own price. 24 guns will now be forged weekly ; I should like, too, to supply the 48 to Bavaria this year.

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[1] Prussia had handed over some of the first crucible-steel guns to the State of the Confederation.

1861 to 1870

1861 to 1870

The years from 1861 to 1863 passed without any great events for Krupp. He had built himself inside the Works a new house surrounded by a park, and made the discovery—after 20 years of putting up with the limited accommodation of his old dwelling—that it was a mistake. Neither his wife nor his weakly son, Fritz, could thrive amid the atmosphere and the noise of the growing Works. He had finished the hammer "Fritz," and was fighting year after year with the artillery authorities of his native land for recognition of the big guns he wanted to forge with it. He had had the King, who ascended the throne in January 1861, as guest in his Works, he knew that he was sure of the King's friendship and protection, but he had to learn that even a King is powerless against the opposition, even the purely reactionary opposition, of the technical authorities. He hoped by his brilliant exhibits at the London International Exhibition of 1862 to convert England to the breech-loader and the crucible-steel gun, and so to influence Prussia (as regards the large calibres), but he found that on that side of the Channel patriotic pride and dislike of the foreigner were as great as was the undignified admiration in Prussia, at any rate in the navy, of English technical skill. The English gun-manufacturers were buying Krupp's gun-barrels—secretly,—but the Prussian Admirals were publicly worshipping England's ships and muzzle-loaders.

Amid such struggles and disputes, with damage to his health, Krupp passed the early 'sixties. His great dream, of making his native land superior to all other States in the possession of the best weapon, was still far from realization.

Essen, 8.2.1861.

KRUPP *to the* WAR MINISTER, V. ROON.

Your Excellency,

May I be permitted most respectfully to submit the following matter?

As early as the middle of 1859 I had conceived the principle of my invention of a new breech-closing mechanism for breech-loading guns, and I came forward with my invention, after thoroughly working it out, at the beginning of last year. After a preliminary trial of the design had taken place, the assurance was given me in the Royal War Office, at the time when General von Voigts-Rhetz was still the head of the General War Department, that my desire to obtain a patent for it through the good offices of the War Office, as being more interested in the matter than any other authority, should be granted. . . .

Subsequently I had the honour to transmit to your Excellency, under date of 1st June of last year, a written request on the subject.

Other States of the Confederation had in the meantime become interested in my invention, as was not unknown to me, and I parried their enquiries by communicating to them the steps which the Royal Prussian War Office might be expected to take.

Under date of 16th November of last year, I was informed by the General War Department that the Royal Artillery Testing Committee had acknowledged that my invention was new and original, and met the practical requirements of the Service, but that the War Office had no sufficient reason to arrange for the desired patent, and that it must therefore be left to me to apply for the grant of a patent in the usual way, all possible support being given by the War Office to such application.

Assuming that this alteration of the situation, as compared with the assurance given to me, would have no influence on the ultimate fruition of my proposal, I did not hesitate to follow the indication given to me, and to transmit to his Excellency the Minister of Commerce on 12th December of last year the application of which a copy is enclosed. The reply which I received, and of which a copy is similarly enclosed, dated 30th of last month, is a refusal—because, in contradiction of the statements made on this question by the Royal Artillery Testing Committee, whose competence is surely beyond cavil, the novelty and originality of my invention could not be admitted.

I have the honour to enclose a plain statement of the essential grounds on which the opinion of the Royal Ministry of Commerce regarding my invention should be characterized as untenable.

I have gained the impression that the Royal War Office no longer attaches the same importance to my invention as it did originally, the reason probably being that another design is, on some account, now preferred.—This circumstance cannot, however, invalidate the statements previously made as to the originality of my invention and its claim to be patented, any more than it can disturb my own conviction of the good ground for the grant of a patent.—For, however much others may differ from me at present, I have every reason to predict with confidence that there is very good ground.—Sooner or later, the essential part of my design will unfailingly be returned to, even if there may be a few modifications of details, because it fulfils in the highest degree the conditions for the most suitable, simple, and solid manner of closing the breech.[1]

Undated,
probably 1861.

ALFRED KRUPP *to* BERTHA KRUPP.

Thursday.

Dear old woman,

Yesterday I did not manage to write ; meantime you will have had my wire. I found Fritz as cheerful as ever, and yesterday at luncheon he ate like a navvy. But he has not yet been out, as it is still cold and windy here ; on the journey we met with hail at Minden, and snow fell here the same day. So we will put off Fritz's departure until warmer weather. I shall not be surprised if he howls when he gets there ; I received such an outburst of joy. I have not yet seen any of our relations and friends, and do not intend to yet ; I want first to have another look round here. I cannot yet say when I shall invite General v. Voigts-Rhetz. I want to put through some more tests first, and satisfy myself again of everything.

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[1] The breech mechanism dealt with in these negotiations was the oldest type peculiar to Krupp, closing the breech by means of a wedge, for so-called "lipped guns." In spite of fighting the matter for several years, and petitioning the King in 1861, Krupp did not obtain the Prussian patent, the decision being postponed from year to year. On the other hand, an English patent was granted in 1862, and a French one later, for the wedge type of breech mechanism for "lipped guns."

I conclude with you and your welfare. Just make it as easy as you can for the Privy Councillor to keep his promises, which I shall not forget. A good deal more, however, is required for success, as you must first shew by your looks that you are better, and I regard this as the main criterion. When you leave Berlin you must be stronger and livelier, otherwise, instead of staying here in the summer, we shall have to spend it at watering-places—where, however, I could not in any case stay with you !—Drop the reading and writing, and instead get some exercise indoors, in the carriage, or walking.—Exercise is good for the digestion and improves the humours and the blood, and that is just what you want. All sitting and reading, writing letters, &c., as you often do for lengthy periods, has the contrary effect. And above all do not go into any hot place. For correspondence with your friends, &c., I would have a form printed, and only fill up a few spaces. Like this, for instance :

"I have received your letter of . . . . , and note therefrom with $\left\{\begin{matrix}\text{pleasure}\\ \text{sorrow}\end{matrix}\right\}$ that things are $\left\{\begin{matrix}\text{going}\\ \text{not going}\end{matrix}\right\}$ well ; as for myself, I am $\left\{\begin{matrix}\text{very well, thank goodness, and}\\ \text{certainly not yet plump and fat, but}\end{matrix}\right\}$ hope this will $\left\{\begin{matrix}\text{remain so.}\\ \text{soon come.}\end{matrix}\right\}$ Since my last letter, I have been for a drive regularly every day through the delightful Thiergarten, and go 2ce a day for 1 hour walking there in the most charming company, which a king would give millions to see. In the end, however, the thing is becoming monotonous, and I am longing to be back with my dear husband, and hope above all that he will be pleased with me. Only do not write to me too often ; that embarrasses me, because I must not write.

"Yours as ever,
"BERTHA." . . .

This form is for other people. But for me, I want a few lines in writing, please.

Give the Privy Councillor my very best regards, and tell him that I am in anything but a merry mood until I can send him a wire on 8th April. Keep some love for

YOUR OLD MAN.

Essen, 25.5.1861.

KRUPP *to* HERR ILLAIRE, PRIVY AND CABINET COUNCILLOR, BERLIN.

Your Excellency

has constantly shewn such a friendly interest in the prosperity of my establishment and recently also in my communications, that, in continuation of the latter, I take the liberty of acquainting your Excellency, by means of the enclosed copy of my memorial of 20th inst. to the Minister of Commerce, with the further steps which I have taken in order ultimately to secure patent rights for my invention of a new breech-closing system for breech-loading guns.

It is my conviction of the utility of the adoption of my invention in Prussia which leads me, in spite of present opposition, to ascribe such importance to the patent.

My claim to patent rights having now been thoroughly explained, and the Royal Artillery Testing Committee having already recognized it in November of last year, I feel that I may count on an early and favourable decision on the part of the Royal Ministry of Commerce, all the more since further postponement would perhaps make it impossible to meet my request, seeing that the length of time which has elapsed since I made and reported my invention clearly involves the danger of its becoming public in an irregular manner, even if only in part, in which case the law forbids the grant of a patent.

Should this actually happen, and should my invention, which was worked out primarily for my own country, thus become common property, and, in view of the decided superiority of my design, be actively exploited by manufacturers for foreign use, I might be put in a position in which, in order to uphold the reputation of my Works and the constant progress and up-to-dateness hitherto aimed at, I should be compelled to depart from my own intention and past practice, and to cease from continuing to deny to certain other States the benefit of my invention and supplies in accordance therewith.

I have thought it necessary to give some intimations to this effect in my memorial to the Minister of Commerce, and it is precisely on this account that I beg to be allowed to deposit the copy of the memorial with your Excellency, for my vindication before His Majesty the King if the case indicated should arise.—

Essen, 2.10.1861.

KRUPP *to* HERR ILLAIRE, PRIVY AND
CABINET COUNCILLOR,
at BADEN-BADEN.

Your Excellency,

I have the honour to repeat, with reference to our last conversation,[1] that in our daily growing certainty we (my house and I) are looking forward with joy and excitement to the promised visit of His Majesty. From 3rd inst. everything will be in order. I repeat, that we hope that His Majesty will at least stay one night here and devote one day to the Works, which are large and cannot be reviewed in a walk through. There must be intervals of rest, say for lunch and dinner.

It would be convenient to know the day of arrival a couple of days in advance, and if possible a few hours in advance the hour and whether Oberhausen or Altenessen is chosen for alighting, also the number in the suite, in order to provide carriages. We have sufficient room, and anyone is welcome whom it suits His Majesty to bring with him. The Minister of War also desires to be here.

I have set up, in a hall 100 feet square, a complete exhibition, which should be looked at in the first place, because here in a single room the whole of our manufacture is represented by specimens, beginning with the unimposing iron-ore, coal, chalk, and clay, and ending with the products,

[1] Relative to the King's visit to Essen, which took place on 9th October, 1861.

which are distinguished by strength, hardness, tenacity, and the highest degree of polish. The manufacture of pig iron and steel ingots is there represented, and the way crucible steel is obtained is shewn ; the crucible steel is represented by sample pieces of all kinds, and the advance in the production of axles, tyres, and guns is shewn by specimens from every stage of the process. Besides a number of completed guns, with improvements in design and mounting, I have also included wooden models of two guns—one for a 150-lb. projectile and the other for a 300-lb. one—intended for the London Industrial Exhibition. The casting for the one is already lying red-hot in the fire, to be forged in His Majesty's presence—the other gun is to be cast here in his presence.

As already mentioned, we hope for a whole day, which will be spent in inspecting and examining interesting pieces of work, including the necessary rests ; if, however, this must be shortened, we should like to have as long a time as possible granted to us.

It would be infinitely agreeable to us if, as soon as your Excellency can get away, you would visit us direct, and help us to receive His Majesty. If there is anyone amongst His Majesty's close personal attendants, who would like to make suitable arrangements regarding bedroom, dressing-room, &c., we should be glad if he would come beforehand and await the arrival of His Majesty.

Essen, 21.2.1862.

KRUPP *to the* MINISTER OF COMMERCE,
BERLIN, VON DER HEYDT.

Your Excellency,

I feel obliged to express my most sincere and obedient thanks for the offer, most kindly conveyed by your esteemed communication of 17th inst., IV 1611, of the honourable post of a judge for Prussia at the London Industrial Exhibition, for Class 32*a*, Steel Wares.

Your Excellency will, however, permit me to submit the reasons which nevertheless induce me to request that the distinction proposed for me may be transferred to some other person more suitable for the position.

My establishment and the problems still to be solved in connexion with its further development demand my entire and exclusive attention, and any other function not devoted to this end could only be accepted at the expense of this my first duty.

Furthermore, I am led to this decision also by the conditions by which a responsible juror appointed by the King's Government is bound.

The choice of a judge, who is a manufacturer in the branch to be judged, might be accompanied by the risk of decisions on the exhibits of his competitors being given with insufficient impartiality ; at least, there would be some reason to fear, in spite of the most honest endeavours, that suggestions might be made that that was happening ;—consumers, wholesale dealers in steel goods, or especially the technical managers of the industrial and transport concerns belonging to the sphere of the Royal Ministry of Commerce—persons who are placed *above* the industrial factions—should be preferred not only for this reason, but also because they have far wider opportunities than one who is exclusively a manufacturer of crucible steel of arriving at a thorough judgment of the very various steel goods which undoubtedly belong to the Class 32*a* in question.

With full and grateful appreciation of your Excellency's offer, I must for these reasons decline it, and I cherish the hope that your Excellency will not withhold your approval of my frank statement of the considerations which influence me.

Berlin, 12.10.1862.

KRUPP *to* CROWN-PRINCE FRIEDRICH WILHELM.

Your Royal Highness,

I beg most respectfully that you will graciously receive a communication arising out of my occupation.—

While in Berlin for the purpose of erecting the guns which His Majesty the King did me the favour of graciously accepting in evidence of the progressive efforts of my establishment on the day which brought me so much honour last year, I have received the news from England that the same design in my trial deliveries to Woolwich has given extraordinary satisfaction owing to the complete tightness and safety of the breech mechanism. After years of unremitting but unsuccessful efforts to effect the introduction into England of my crucible-steel gun, patented there, the condition of the introduction being, over and above the admitted advantages of my material, the invention of a better breech mechanism than Armstrong's, a star of hope has now risen for me. I propose, therefore, to go to England at an early date, to obtain a decision on the opening up of relations with the English War Office and Admiralty, a question of national interest, the solution of which might justifiably satisfy my boldest ambitions.—As I am personally unknown to both the Ministers, the initial difficulty could be surmounted by an introduction which left no doubt as to my character and my position as owner of the establishment at Essen, and I therefore cherish the desire to gain the most effective of all introductions. For this reason I beg your Royal Highness for this favour, if there should appear to be no objection to it. I am convinced that I myself can then adequately offer all further guarantees that would be required from me as a manufacturer. Should, however, the above request be found inadmissible, then I beg that it may graciously be regarded as not having been made.

In conclusion, may your Royal Highness accept the heartfelt wishes of my wife and myself that your present holiday may prove in the highest degree satisfactory to yourself and to Her Royal Highness the Crown Princess.

Crucible-steel Works at
Essen, 7.11.1862.

KRUPP *to the* MINISTER OF WAR
AND MARINE, V. ROON.

Your Excellency,

In continuation of correspondence in June last with the Royal Ministry of Marine relative to crucible-steel armour-plates, I venture most obediently to inform you that I have now succeeded in producing specimens of forged plates from that quality of crucible steel which I at present consider suitable for the purpose of armour.[1]

I reserve to myself the further modification of the quality as may prove necessary in view of the results which may be given by the experiments to be carried out.—

Before the completion of my rolling-mill, which will be able in future to deliver plates of this kind in any size and quantity, your Excellency might perhaps desire to obtain definite data regarding the capacity of the chosen material to resist the effects of projectiles, and for this purpose to have a few sample plates subjected to appropriate tests.

Before bringing the rolling-mill into use, however, I cannot make test-plates of more than from 1,500 to 2,500 lbs. weight apiece, but within this limit I am prepared to supply 3 or 4 samples. It may be desirable to make these in various thicknesses, so that the thickness of the iron plates, as well as lesser dimensions, would be represented, and consequently comparative results could better be obtained.

I should like to have instructions regarding this point, and regarding dimensions generally, within the limits of weight mentioned.

My offer is only intended to help the question along, and therefore I would supply these samples free of charge.

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[1] The experiments with armour-plates then begun were unsuccessful, and further experiments in the following years also failed to bring success.

Berlin, 27.2.1863.

Krupp *to* Crown Prince Friedrich Wilhelm.

Your Royal Highness,

I have the honour most obediently to return herewith the correspondence[1] graciously entrusted to me.

At the same time I venture to express my sincere thanks for the introduction provided for me through your personal efforts, as well as my surprise and gratification at the consequences. I thank H.R.H. the Duke of Cambridge for the interest which he has shewn in my purpose, and I am firmly resolved to be deserving of it, by serving England with something worth having.—

My gun-material is known throughout the world ; let the leading English manufacturers themselves decide whether they are in a position to supply its like. The importance of a reliable material requires no explanation, for without this reliability of manufacture the guns are an instrument of suicide. The English method of manufacture of guns, which are produced by welding, is very precarious and uncertain. The difficulty increases with the size of the calibre. Faults which will bring destruction may exist unnoticed in the guns, whereas in a crucible-steel gun of my make, which is bored out and clean, no fault can remain. Out of thousands not one has yet revealed faulty material.

Even if the superiority of my breech mechanism were not admitted, in spite of the way in which it has already proved itself, there is at the present time no substitute for my material. It is well known, too, that there exists nowhere else plant of the kind that would be able to produce forged guns in such quantities and of such large dimensions. And in such urgent circumstances, why should England not obtain the material from her friends abroad, until her own industries can make it ? The completion of the guns can, if desired, be carried out in the English factories, although I am quite ready to place my plant at England's service for the purpose. I call it service because I have already refused it to many other States. I have felt no doubt that, in the event of my product giving satisfaction, the English Government would seriously consider the matter, for it is only on that assumption that I could see any reason why I should send such expensive specimens to Woolwich for trials. I have asked no payment for them ; the opinion of Sir George Lewis,[1] that my price was a material objection, can thus only rest on surmise, as no question of this kind has for the present been discussed.

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[1] The correspondence related to the steps taken by the Crown Prince to introduce Krupp to the British Admiralty.

From this somewhat lengthy statement, your Royal Highness will perhaps deign to recognize that you have spoken in favour of a sound affair. . . . I have not asked for consideration of what I have to offer with a view to my own profit, but rather in the conviction that it will be to England's advantage. I proceed from the conviction that the present decision of the Government[2] does not aim at the selection of the better of two imperfect designs for use in the defence of the country and in war, any more than that the necessary decision as to the system to be adopted aims at favouring any English inventor or constructor, but merely that in this question it is in England's highest interests to discover and introduce the best system of gun-construction, from any source, as regards material and design, and consequently the most solid, the most lasting, the safest in manipulation, and at the same time the best value for money.

If I am mistaken in this assumption,[3] I have of course nothing further to do than to fix a limit to my efforts. . . .

In conclusion, I beg that your Royal Highness will accept once more my most dutiful thanks for the great favour which you have shewn me in supporting my endeavours. In the event of an encouraging result, I shall go to England in due course.

I remain with deepest respect . . .

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[1] Sir G. C. Lewis was Secretary for War in Lord Palmerston's second administration. He died on 13th April, 1863.—Translator.

[2] The decision to hold exhaustive trials of the different designs of guns.

[3] That was indeed the case ; consideration for home industries and the reputation of Armstrong and Vickers proved to be the deciding factors.

The autumn of 1863 brought, with the first large Russian order, a sudden intensification of the quiet development of Krupp's in the early 'sixties. Krupp was already sufficiently busy with field-guns to add a second gun-workshop quickly to his first ; heavy guns, on the other hand, were a departure from tradition and met with resistance from the old gun-factories, which were adapted for bronze. Russia made the first breach in the wall of these prejudices. Krupp was also asked to co-operate in the work of design, and for years the best of the Tsar's gun-designers were in and out of his workshops and his house. The Danish War and the beginnings of the navy of the North German Confederation helped to keep the ball rolling. Krupp's name acquired an international reputation, and that reacted on his native land. His Works grew without ceasing. The introduction of the Bessemer process, and the purchase of the Sayn Foundry, with its great fields of ore, from the Prussian State, were the important events of this last and fateful period before the Austro-Prussian War.

Krupp's first meeting with Bismarck took place in the summer of 1864. At last he himself put a clear gap between the older time and the coming one, when in 1864 he left his house in the Works, and took up his residence at " The Hill," a spacious country house, with large grounds, on the Ruhr. Slowly freeing himself from matters of detail, he concerned himself more and more with the large questions of his working community and of the industry generally. His greatest trouble remained his inability, for many years to come, to find anyone who could entirely relieve him of the immediate control of the Works.

Essen, 3.1.1864.

KRUPP *to* DIECHMANN.[1]

PLANT QUESTIONS.

Herr Diechmann,

To consider getting a hydraulic plant by means of which we can draw all pressure, however great or small, out of one pressure-reservoir, viz.,

1. a plant for cutting the largest bodies, whether axles, guns, or tyre-castings ;

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[1] As chief engineer, Gustav Diechmann was in the service of the Firm from 1859 to 1883, in charge of all the technical work.

2. the splitting of the tyres with two pressures (instead of sawing) in a red-hot state ;
3. their opening out ;
4. hammer and pressing plant to squeeze out all moulds ;
5. horizontal pressing plant for the pressing out of axles, and their parts, to press out the place where trunnions are forged out, and the flanges at the ends of cranks for ships, &c. . . .

[Details follow].

With such an arrangement, the pressure-pump can be always in movement, even with the pressure-machine working irregularly by fits and starts, seeing that space will be provided for the pressed mass of water by the raising of the cylindrical pressure-cylinder (which floats).

This last idea came to me some time ago from Herr Wm. Siemens in England, and was then intended for the cutting of the tyres—but was too dear to adopt, as we wanted to have 1 million pounds pressure. Now this machine must of course be enormously larger and more powerful, so that a pressure can be exerted of 10,000,000 pounds (ten million pounds), if possible, or more.

If something of the sort is designed, and we could be sure that S[iemens] would not draw other people's attention to it, it would not be inappropriate, and would be well worth while, for us to put the design of the pressure plant before him for an opinion.

Berlin, 26.1.1864.

KRUPP *to* A. PIEPER.[1]

I am curious to learn the prices (particularly from Grossbodt, who once made me an offer). For the rest, I am determined to acquire as much as possible of the big triangle as far as the Ruhr. A sketch of what is already offered would be very convenient for me, and if the outer limits of this are indicated (only in pencil) with reference to the greater whole —then I can understand it.

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[1] Albert Pieper, a proxy for the Firm since 1862, and highly esteemed by Alfred Krupp for his business and personal qualities, died in 1870 while still young.

The whole would be very nice, but the question is whether the extension, once I am known as the owner, will not be very much dearer than before. For the rest, I do not want to consider Unterbarnscheidt. A tract on the Ruhr is very pleasant for making gardens, fish-ponds, a bathing-place, and so on ; I should also like to have sufficient ground there on the flat, suitable for pasture, to keep a bit of a stud. Young horses jumping about in a meadow, that is a delightful thing to see !—I must consider further what kind of person is to pose as the purchaser. A Cologne banker (man of money) will have to pay more dearly than a more ordinary man (private gentleman or agriculturist). I had already thought of Jürst, whose son is studying agriculture and is later on to have a landed property. But he is too well known there as my friend.

My kindest regards to Herr M., and beg him from me, in these circumstances, not to hurry, but to allow himself a couple of weeks' rest after his fatiguing work. I am already revelling in the hope of realizing an aspiration which I have been carrying about with me for years, and should like now to settle at one stroke everything that is necessary and useful for the development of the estate *en vue* of the Ruhr. Once I am fixed there, and it is known that I intend to build and lay out grounds, I shall ever after have to pay gold for what can still be got at present for silver.

Berlin, 27.1.1864.

KRUPP *to* A. PIEPER.

. . . I told him[1] it was a matter of indifference to me whether my breech mechanism or Krainer's was preferred in future ; but that about 30 out of the 50 guns forged for Russia are already bored to their calibre, and thus cannot be used in any other way.

While we would have supplied the guns completed with *our* breech mechanism without extra charge, we shall supply the Krainer ones only with roughly prepared breech, or, better, without any slot for the breech-block, and Krainer will then see to the completion of breech and rifling at Russia's expense.

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[1] Von Doppelmair, the Russian Military Attaché in Berlin, who was negotiating about supplies of field-guns for trial.

We wanted of course to have the advantage of introducing our mechanism. In Russia, they are already quite prejudiced in favour of it [i.e., of Krainer's mechanism] and have not a good idea of ours. All that is Berlin's doing.—Machines are being ordered from Krainer for completing guns in Russia with Krainer's breech mechanism, and they want to start a workshop for that purpose.

I hope, however, that in the end our simpler mechanism will yet be introduced, since it is cheaper, stronger and easier to clean, as well as less exposed to damage from enemy missiles.

I close with best wishes.

For important negotiations, I prefer an interview to lengthy correspondence.

Berlin, 22.2.1864.

KRUPP *to* VON ROON.

Your Excellency,

I have the honour most obediently to announce, in confirmation of what has gone before, that, on the occasion of an audience, I have just found an opportunity to repeat to His Majesty the King the offer made to your Excellency, to the effect that, if a rapid production of guns, in excess of the provision in the Estimates, were desired, I am prepared to undertake supplies, pushed on to the utmost of my capacity, up to a value of one, or even two million thalers,[1] on terms of payment extending over years. In the same spirit, I am prepared to put in hand a dozen batteries of 4-pounders at once, and to deliver them without claiming any payment, so that there need be no delay in decision on account of the money question.

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[1] £150,000 to £300,000.

Berlin, 29.2.1864.

KRUPP *to* A. PIEPER.

. . . In order, after the purchase has been made,[1] to discuss the project with a prominent architect here (and then perhaps to invite a suitable man to visit the place), I have made the enclosed rough sketch for a general explanation, and should like it returned to me for that purpose. There are in question, then, the house, stabling, riding track, courtyards, park and garden grounds, hydrostatic machine, fountains, cascades, fish-ponds on the hill and in the valley, game-cover, viaducts over hollows, bridges, pasture on the Ruhr for horses and other animals. We must therefore get rid as far as possible of unpleasant and disturbing protrusions of other people's property into ours, inconvenient neighbours, miserable hovels with inhabitants of doubtful character, thievish neighbours ; also, if it does not cost too much, remove the coal-working and the coal-store, particularly the dust and smoke of black coal, and meanwhile keep an eye on the ground to the right from Unterbarnscheidt.

Of course we do not want to pay too exorbitantly ; on the other hand, I should like to do what is possible to keep the air and the view clean, and to make the future extension of the property feasible. I will offer what my circumstances permit to increase the amenities there. I look upon this scheme as a means of prolonging life for myself and my family, and if I live a single year longer because of it, I can surely employ a year's profits there, even if I have to regard the cost as mainly lost capital in relation to revenue.

I hope to substitute it for the necessary expensive visits to watering-places, and to have our only boy with us, whereas at present he must live either alone as now or with my wife and far away from me. . . .

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[1] Of the land on the Ruhr for the projected country house.

ST. DEINIOL'S LIBRARY
HAWARDEN

Berlin, undated
(end March, 1864).

KRUPP *to the* FIRM.

What is written must agree with what has been spoken. I told the War Minister that the castings were ready, and that, 6 months from the day of starting, at least the first gun or guns would be sent off.[1] The reply must correspond with this, and an assurance in this sense must be given, instead of depicting everything as doubtful, and saying that nothing can be said. We must now be experienced enough to be able to say (unless prevented by *force majeure*) that we shall deliver the first guns after 6 months and the whole number successively within such and such a time (and you must not exceed 12 months, and must be prepared to accelerate the remainder to the utmost of our capacity, should circumstances demand it). We must be able to make further deliveries 2 or 3 times as large within a year of the order, but in the letter our productive capacity is expressed with so little boldness, though we are committed to putting in hand immediately what has been paid for, that we are inviting the stoppage of any further payment, and preventing agreement to my proposal regarding the sale of bronze, and also, since the guns are really wanted, should find them searching the whole world for guns to meet the urgent need which we were failing to supply. We must put all our energy into serving Prussia quickly, and obtain as rapidly as possible what is lacking, rifling machines and the like. The many 100–150 and 200 cwt. hammers and 400 cwt. h. will enable the smiths' work to be extraordinarily augmented if they are used for the final forging.

I suggest that you should cut it short and say that you,[2] with Herr Richter, will follow the offer on Saturday or Monday, with a view to further explanation of the matter, in case a discussion on *that* day should be convenient. . . .

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[1] The behaviour of the rifled guns in the Danish War, which had just ended, had shewn an increase in their numbers to be a pressing duty. Roon's procrastination was brought to an end by the intervention of the King, who gave instructions for a further order to be given for 300 crucible-steel field-guns.

[2] Pieper, who was then the leading member of the board of proxies.

If we can shorten the period of 12 months, it would add to our credit, and if a few guns remain outstanding, it will not be a hanging matter. *Only just now do nothing to shatter their confidence !—*

Essen, 21.5.1864.

KRUPP *to* LIEUT.-GENERAL V. TODLEBEN.

Your Excellency

has provided for me a most pleasant surprise in sending me your work on the Defence of Sebastopol. As yet I have only turned over the pages, and I am looking forward to the enjoyment of some quiet hours to come, when I shall be able to study this monumental work with the attention it deserves. For to-day, and unfortunately after much delay, I confine myself to expressing my heartiest thanks for the gift, and, for the moment, for the continued good feeling towards myself thereby implied ; of the value of the gift I know as yet only the high opinion of others, and what I, from my layman's point of view, might have to say about it, I will reserve until after I have studied it. I only hope that I have sufficient understanding of the subject. For the past year and more I have constantly been intending to utilize my first free hours in renewing our long interrupted correspondence, and at last I have come to actually doing so. It is no easy task to find excuses for the discontinuance, in view of my good reason for knowing the interest which your Excellency takes in my house and my doings, and I cannot give any other explanation than that, in the constant whirl, I have never found the quiet, the collectedness, or the time, needed to express myself with a fair amount of fullness, to give a complete picture of the development here, and to touch sufficiently on the many things that to my knowledge are of interest to you. Even to-day I cannot manage it, and console myself again with the hope, which has so often hitherto had to ease my mind in my discontent with myself, that your Excellency would soon come and see everything in a personal visit.

The gentlemen of the Artillery Committee, who visited us on their mission,[1] gave us the most gratifying news of the good health of yourself and your family, and we were particularly pleased to hear that the ailment, on account of which you formerly visited Germany, has quite disappeared. General Mayevski, and Professor Vishnigradsky, who was recently here again, will probably have found an opportunity to tell you about the extension of the establishment, which now employs nearly 7,000 people, and of which a great part is working for Russia. This work has gone on splendidly, and I have made the pleasant discovery that the progress which has meanwhile been made in methods of production will render it possible to manufacture future requirements of heavy and light guns, particularly naval and fortress guns, which demand the more difficult large castings, at a very considerable reduction of cost. The production on a big scale, keeping my large machine-shops fully occupied, has a great deal to do with this. Amid my complete satisfaction, it was a great disappointment to me that the experiments with the projectile and groove system in the two first guns were not a success ; however, it may be hoped that this failure will point to the safe way, and that it may thus prove to have been a fortunate event.

I cannot go on to-day to give further details about the Works, guns, armour-plates, &c., and must keep this for a later date. I am attacking armour-plates seriously, but reserve any report on them until I can send in large thick plates for test and offer them in quantities. My wife will enclose a few lines. I was very happy at the distinction which His Majesty the Emperor conferred upon me.—May our wish, to see your Excellency and family with us for a good long stay, be fulfilled quite soon after all.

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[1] Krupp had been occupied for months with the execution of a million-thaler Russian order for heavy guns, in the design of which Russian officers were assisting.

The Hill, 25.12.1864.

KRUPP *to the* FIRM.

. . . With a view to the use and selection of material for guns, we must also make machine tests of the qualities of C and T steel[1] by pulling apart and crushing. It will be important to establish the amount of extension and compression for each quality before they pass the limits of elasticity, and the difference in the strain which has this effect in the one or the other quality. (In all tests, at least 2 pieces of each must, of course, always be taken, or, still better, 2 of each, each pair from two different ingots of the same quality, and the average taken. It is never sufficient to rely upon a single piece for a test.)

It would be a very good thing, apart from the test of the quality in forged bars, to make one in addition on the gun-castings in a forged state, cutting a slice from the cylinder and cutting that through diagonally, and so making the comparative test in this more doubtful condition and direction, which is precisely what is in question.

The above considerations are connected with the bursting of the 4-pounder of C steel (although it was a rejected, faulty gun showing visible defects with 2 lbs. of powder and a 40-lb. projectile), and with the necessary precautions which are essential for the reputation of the Works, for their future standing and existence, and for the peace of mind of everyone who is concerned in the manufacture of the steel guns. For no one would like to have on his conscience a share in the cause of the accident, if a gun burst anywhere in use—either when treated in accordance with the regulations or even with an overcharge of such size as the powder-chamber is adapted to take.

We must be in no doubt either about the 300 4-pounders for Prussia, or about the guns to be supplied for other States —not about a single specimen ; it is for that reason that I arranged for the tests of the Prussian gun, which we must extend further still, before we have the 80 6-pounders made of C.

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[1] C and T steel—Bessemer and crucible steel. Attempts were being made to produce light field-guns from Bessemer steel, the uneven constitution of which was not then known. After the failure of the first batch, Krupp reverted to the exclusive use of crucible steel.

Wherever we are not perfectly sure that we can use C, let us take T, even if we have already bound ourselves irrevocably to a fixed lower price, or, alternatively, renounce the contract, preferring to leave it to others, who are ready to supply, in opposition to us, the lower quality with risk to safety. Faulty goods must never be supplied ; rather than that let us earn little, or do no business at all. That does not mean that we are to be indifferent to profits. On the contrary, within the limits of the above guarantee we want to gain as much as possible by economical methods of manufacture, and above all things not to cut prices to a prodigal extent.

I repeat, no doubt must remain whether a 4-pounder could be burst on test or in use, for it must be remembered that there would be a possible danger of injury to those around, from the gunner through all ranks up to the King, and we certainly cannot allow this, even if it were to cost hundreds of thousands. If it came to the worst we should have to admit that an error has been made in the choice of the castings or of the quality, and to state that we are determined to supply the guns manufactured complete at Essen from the very best quality, for the breech mechanisms made at Spandau.

Essen, 15.1.1865.

KRUPP *to* WIEGAND (PROKURA).[1]

Herr Wiegand should preserve this ; there is no hurry, and it can be thoroughly discussed at a convenient opportunity after Herr Pieper's return.

I want once more to call attention to what I have mentioned so often before—the need for regulations whereby, once and for all, the necessary interest is taken in the supervision of the work, so that idleness and waste of time, such as can daily be seen, are no longer possible—and I desire that, without further intervention on my part, a comprehensive code of instructions for this shall be worked out.[1] During the time when the chiefs are not on the spot or no one supposes them to be about, it will be found that, with a few honourable exceptions, the shop-managers, foremen, &c., under them are also not too particular, and that this is happening everywhere where men are on day-pay (not on piece-work).

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[1] Board of proxies.

I do not require the chiefs to begin with the workmen, but I do require the practical work-supervisors to do so, and the chiefs should make it their personal business to keep a check on them. During the time when fixed wages are paid, the same supervision is always necessary, and if we do not once for all set up rules, the time will come when the Works will be regularly active from 9 to 12 in the morning and from 3 onwards in the afternoon. If one walks around early in the morning or afternoon, one finds everywhere in the open spaces and in the shops dawdlers and loafers. I am specially privileged never to find things in order in certain places, and on some future occasion I may single these out for emphatic comment.

Probably Berlin, 27.1.1865.

KRUPP *to the* MINISTER OF COMMERCE, V. ITZENPLITZ.

Your Excellency,

I am immensely obliged for the proof of continued goodwill which I recognize in your kind communication of yesterday. Sayn will very probably be sold by my successors, if at some future time it reverts to agriculture and cattle-rearing, when there is no more ore to be found in the mines, but until then one may confidently say that it will not.[2] As long as my establishment continues, a partial use of the iron ore from there will remain quite indispensable for my special method of manufacture and my equally special product. For that matter, everything indicates that this establishment will continue as surely as any other earthly thing that seems to be warranted for centuries.

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[1] Krupp first complained of the relaxation of order and supervision in the Works in emphatic terms in 1864. He repeated the complaint year after year, and at last almost more passionately than any other.

[2] The Sayn Foundry, bought from the Prussian Treasury in 1865, remained in the possession of Krupp's for over 60 years. Krupp's prophecy was fulfilled in 1927, when the Foundry was no longer of technical importance.

The considerations, attention to which has been recommended by His Royal Highness the Crown Prince through Herr Duncker, appear to overlook the decision that no more cast-iron guns are to be made in future. For this reason it would in any circumstances not be to the interest of the State to regain possession of Sayn, since the State Factories cannot use the Sayn product except for cast-iron guns. Sayn cannot have for anyone else the importance for industrial purposes which it has for me. I need it in combination with my Nassau mines, to refine the ore by my own special method in accordance with the processes at my Works, in a different manner to that followed hitherto, and to obtain an even more suitable product than previously. On the other hand, the Müsen Company is in a position to supply the whole industry for all time, from its far richer mines, with as much specular iron as the whole industry will ever use, and of as good quality as that formerly produced from Sayn.

Vienna, 17.2.1865.

HERMANN ORGES[1] *to* ALFRED KRUPP.

I cherish the hope that you, honoured Sir, will remember not only my name, but also myself; I had the honour to make your acquaintance at the London Exhibition, when the famous 3-pounder, from which such rare and great things were to proceed, was already known to me from Berlin.—Perhaps you also remember that I was the first artilleryman by profession to recognize the importance of crucible steel as a gun material, or at least to champion it openly, and it was in consequence of this view and of my personal connexions that my father's Brunswick experiments and Colonel Weber's Augsburg ones were made;

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[1] H. Orges was the son of Colonel Orges, of Brunswick, who had published the first sensational tests of a Krupp 6-pounder.

that I was the first to look for the real secret of your wonderful Works in your personality and your special capabilities, spurred on by noble patriotism and by noble ambition, and that in consequence I pressed that great Austrian, the late Baron von Brück, to try to persuade you to set up branch Works in Austria.

I recall this because I need your trust in my judgment, lest you should curtly refuse my request, considering it not worth while to go more closely into the matter. . . .

The matter in question is the construction of 2 or 3 gunboats of about 300–350 tons English, and of 2–3 corvettes of about 1,500 tons.[1]—It is contemplated to have them built of iron, by " a firm of standing." (I am afraid that this means—in England.) I have pleaded most strongly that iron should be left entirely out of account, and that steel (Bessemer ?) should be used, either wholly or mainly. I let it be known in the highest places that I would venture to ask you whether you would be prepared to support this great patriotic undertaking with your extraordinary resources.—The first steel ship in the world, the first steel warship, must be a German one, and thus provide proof that we, that the German people, so long lagging behind the rest of the world in this particular respect, have suddenly taken the lead in shipbuilding.—From a material point of view, the undertaking will perhaps scarcely cover costs, and I can therefore find nothing but the following as a recompense for the great amount of trouble, and the great responsibility which will be involved in consenting to my request.

1. A revolution in shipbuilding will be connected with your name in two ways, as regards both the steel construction and the production of the building material—including the riveting and welding of the whole—internally.
2. The first steel warship in the world shall bear your name.

Do not forget that world history as a whole is classified into periods named after the materials which man has had for tools.—The primitive Wood Age was followed by the

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[1] For Austria.

Stone Age, and then by the Bronze Age; we are in the period of Iron, and every future historian of civilization will have to teach that with the building of the German steel corvette *Alfred Krupp* the Steel Age began,[1] if you will build the first steel ship—that you can do it is unquestionable. . . .

Essen, 20.2.1865.

KRUPP *to* HERMANN ORGES,
VIENNA.

Of course I remember our first meeting in London, just as well as the various proofs which you have given of your interest in my efforts, which, however, you appear inclined to overrate. I am honoured by your letter of 17th inst., and am impelled to answer it at once, and in the first place to express my sincere thanks for your goodwill, and for the excessive confidence which you place in my achievements. With the same idea and purpose as yourself, I have been experimenting for years, and, amongst other plant, I have already constructed a rolling-mill, in which a set of rolls consisting of crucible-steel cylinders 15 feet long is driven with 2,000 h.p., for the production of plates of a weight, width, and length such as have hitherto not been contemplated, let alone made. Half of this mill, with a 1,000 h.p. engine, is in position and running; it will be quite a year yet before the whole is completed. At the moment the rolls are working for other purposes, not for armour-plates but for boiler-plates of crucible steel. Strangely enough, it has turned out that, while with the same composition of the material, crucible steel in the smaller sizes far surpasses in strength the best iron for breastplates, boilers, and the like, it has not the same superiority over iron for armour-plates. The softest crucible steel is still too hard for it to be safe to reduce the thickness, and for this reason its employment is not a practical policy, as, unless it shews this advantage, it

[1] Krupp declined the proposals of this enthusiastic young man in rather cool terms, but this technical paraphrase of the terms " Stone," " Bronze," and " Iron Age," &c., stuck in his memory (cf. his letter to the Emperor dated 23.4.1871). It is noteworthy, too, that 30 years later Orges' predictions were almost literally fulfilled in the Krupp " Germania " Yard at Kiel.

is too expensive. For the present, therefore, I am unfortunately unable to support your project, as I can give no prospect of its success yet, although I am continuing my efforts. —I cannot help admitting to you that the product of the English factories of Brown & Co., Thames Works, and some others as well, at present makes better plates for such purposes than I am in a position to offer. For the present, the softest iron plates will be conceded superiority as regards capacity to resist projectiles. You will find that, although England may supply very useful plates of Bessemer steel for boiler, &c., purposes, this material will nevertheless be quite unsatisfactory for armoured ships. I therefore recommend that, for the present, English iron plates should still be used ; very good iron plates are also made in France. If later on I am in a position to supply something better, I shall announce the fact. Progress goes on quietly, and the goal to be aimed at requires time. . . .

The Hill, 25.2.1865.

KRUPP *to* RICHARD EICHHOFF.

Now that we *own* Sayn and the Nassau mines, the more rapid development of the mining and the foundry (however important a matter this may be in the future in its bearing on economical large-scale manufacture) is in no way comparable in importance with the speeding-up of the *greatest possible output from the C process*[1] in the new building, even if we had to buy all the pig iron for this purpose. The first point is to secure the raw material for the full activity of the whole of the Works, even if it costs a few thalers more per 1,000 pounds ; the advantage of exploiting our own mines is a secondary one. A month saved in bringing the new C plant into activity is worth more than ½ year of progress in the operation of the foundry and mines. In saying this, I do not want to depreciate the value of aiming at the maximum of perfection in the latter, but I want to recommend that no attention should be devoted to the latter at the

[1] Bessemer.

expense of the former.—The C process in the greatest extension that can be attained is the bread for which we are hungrily waiting for the bulk of the hammers and rolling-mills. Once we have that, the time will have come for thinking about producing it better and more cheaply.—

I am waiting for my bread and butter for lunch, and remembering our conversation regarding what is now the first essential, and so am writing at this length to pass the time ; I shall be briefer next time to make up.

Hope you have a nice trip.

Remember me to all the gentlemen who are now related to us, Engels, Düber, Kroeber, and others.

The Hill, 9.3.1865.

KRUPP *to the* PROKURA.

To the group of gentlemen, into whose hands the welfare of the Works is committed, I address the following observations.

Nobody will, I suppose, deny that anyone can err, can fail to get an entirely correct idea of a matter, and can reach his goal more surely with the support of others in harmonious consultation and co-operation. Mistakes will occur even then, but not so many. We must, however, endeavour to avoid mistakes as much as we can. To this end, I have already said elsewhere, and I repeat, that I must insist on the co-operation of at least *three* persons in every vital question. This I mention by the way ; the main purpose of this communication is to call attention to the fact that, in order to avoid errors, mention should be made of everything which experience has shewn us not to be entirely correct and advisable, and even then it may happen that one or another will hear fault being found with what he has proposed or carried out with the very best intentions. In such cases I should like to warn everyone not to feel personally injured by such intimations, since there is no intention of making personal unpleasantness, but objectively to review the measures which fail to find approval as a warning of what to avoid. Assuming that I myself am in error (in blaming someone), that I think something has been done wrongly, but have myself been misled by an erroneous judgment, then I shall be grateful to anyone who will shew me my error, and shall not be annoyed about it.—Everyone will share my conviction that we should all do many things differently if we had to do them again, and everyone will feel that many things must be avoided in future, and that it is indispensably necessary to the continued prosperity of the establishment that the greatest amount of thought should be exercised on all hands, and the greatest activity in the direction and within the limits jointly determined. I hope that I shall never need to recur to this, and want to say it, once for all, to all those of my managers and friends who are in immediate touch with me.

The Hill, 12.3.1865.

KRUPP *to the* FIRM.

Not pressing, only an incidental observation.

If I had not wanted to set to work until all arrangements were complete, I should to-day be a journeyman. To attain one's end with the smallest means, to work and to earn without losing time, that is the task, and that is what I cannot sufficiently recommend to you gentlemen as the practical thing. To raise difficulties is very comfortable, but to get over the difficulties (without making a fuss about them) is what we need—time should be valued more highly.

Reflection and strenuous activity is the one remedy for excuses on the score of " impossibility." It makes the impossible possible—the " impossible " is too readily recognized —as a matter of comfort.

Essen, 10.8.1865.

Krupp *to the* War Minister, v. Roon.

Without the material of the gun having been tested, and without even one of the gentlemen having seen the fracture, the Admiralty has preferred a charge against me, namely, that the trouble was due to a fault in the material. I have demanded that the strictest tests should be applied, as far as possible by my enemies, in order to prove the contrary.

The representations which I made about the shape and proportions of this gun at the time of the order were disregarded.

The incident will ultimately bring important advantages. The main point at the time was that Prussia should get the best guns, and I assure your Excellency that, provided it is of suitable shape, any gun can be produced here of equally high quality, even if it were intended for 60 lbs. of granular powder.

The Hill, 16.11.1865.

Krupp *to* Richard Eichhoff.

To my authorized representatives for consideration, with a request for any useful remarks, since testamentary dispositions may be affected.

I want, as early as possible, to get a clear view ahead, and not to be in any doubt about questions which have a material bearing on the future.

Segeroth has been bought for blast-furnace operation,[1] and the whole piece of ground may some day be required for the purpose.

The blast-furnace plant is not intended for puddled steel alone ; its principal object is the production of C steel, which will in future fill the great world-wide demand in replacement of iron.

Though we must keep up the manufacture of steel for tyres, axles, and similar more remunerative articles, by remelting the pig iron in reverberatory furnaces, it is already clear that, for rails and so forth, we simply cannot stand against our competitors unless we do as they do, and carry out the decarbonization direct from the blast-furnace (the process adopted in the C plant, without a second remelting).

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[1] Krupp's far-seeing plans regarding the connexion between blast-furnaces and finished products had to wait two generations for their realization.

In the first place, then, we have to experiment, and to find out whether and how we can produce usable C material from the iron ores at our disposal, and then we must combine prudence with boldness (each in turn as indicated) in planning our blast-furnace establishment, and in putting one furnace after another into operation so quickly that we neither lose time nor waste the experience gained from the first start onwards during the development of the complete scheme. . . .

I assume at once that in the future there will be a dozen or more of such blast-furnaces at Segeroth, serving the different purposes of the Works, and adapted to such variations of production as may be useful and possible, and that a C plant will be connected with them for producing material for rails and the like (on the assumption that in this way we shall be working at a certain and reasonable profit in the face of competition). For tyres, plates, axles, and the like, however, I think that the other—the original—process must be retained, and I look upon the extra cost as being quite reasonable on account of the reliability of the goods so produced.

N.B. We might perhaps secure a reduction in the amount of variation in the quality of the C steel from the various blast-furnaces, if we always *mixed* the product of several furnaces in the crucibles. The possibility of this depends upon the way in which the arrangements are thought out beforehand ; rapidity is more necessary than jugglery.

It will be of great importance to utilize the gases from all the coke ovens and blast-furnaces for raising steam, and to cover the expensive working of the blast apparatus from the big steam reservoir common to the whole establishment. . . .

Before we build blast-furnaces on the scale I have here indicated, we must of course make sure of our supplies of iron ore for our special requirements for 50 years ahead, either by the purchase of mines or by adequate contracts. We must not encroach on the rights of Jacoby, Haniel, & Huyssens, lest we endanger the existence of the establishment and our possession of it ; we must stick to our speciality, and ensure ourselves for the whole future the maximum business at a reasonable profit by means of our material and by perfecting our organization and administration.

The object of all this is systematic and deliberate progress. —Admittedly, time, circumstances, and experience allow of nothing being perfectly planned in advance, and, according as their teaching may indicate, a different development or even the renunciation of the scheme is always conceivably possible (or necessary).

The structure of the Krupp Works, to all appearance so firmly knit and in actual fact resting on so solid a foundation of orders and work, was shaken again and again by financial crises. Krupp himself was not without blame for these ; his building operations, his purchases of raw material, his extensions, his plans, often went beyond the imagination of his collaborators, but he would not and could not reconcile himself to a cautious financial policy, supported by long-term credits. His craving for continued independence constantly ran ahead of his caution. This brought him into perilous situations as early as 1865, and still more in 1866 in the period of tension which preceded the war with Austria. Advances of millions from the Prussian State Bank, only partly covered by current orders, helped him several times out of these situations, but this was never of more than transient assistance. It is not surprising that he finally collapsed under the stress of these constantly recurring cares. His health, never robust, became seriously affected, and during the war of 1866 he was able to save himself and his family—Fritz too was seriously ill—from the threat of breakdown only by a long stay in more southerly climes. For the first time since he took charge, the Works had to carry on for a year and more without his personal guidance. But in so far as he was able to think and write, in pain and trouble, he followed their activities from afar with unflagging keenness.

Berlin, 15.1.1866.

KRUPP *to* RICHTER *and* BEYER.[1]

The *bronze gun* which was obtained from Spandau must at once be tested to destruction, and the fragments must be used to cast 2 bronze heads, similar to the cast-iron heads recently tested, that is to say, of the weaker dimensions (not the stronger, which we arranged for yesterday). These bronze heads will then be similarly tested to destruction ; there is no question of testing the *effect of the angles*, and the angles should therefore be made the same as in the present Prussian 4-pounders.

It is only a question of comparative test of the performance of bronze heads against cast-iron and crucible steel.

Essen, 26.3.1866.

KRUPP *to the* WAR MINISTER, VON ROON.

Your Excellency,

I have most obediently to inform you that it would be a matter of infinite regret to me if you were unwilling to honour me with your presence at the contemplated test. I repeat my request, and beg to state that the Belgian Minister of War will be here early on the 28th inst., at a test of the Russian 9-inch gun. In addition to yourself and Lt.-Col. von Rieff, anyone you desire to bring will be welcome ; I should no longer object even to Colonel Scheuerlein, in spite of our differences. On the other hand, I freely admit, with reference to my former communications concerning past unpleasantness with Major Wesener, that no one would be so unwelcome in my Works as that gentleman, as it is impossible to permit presence at the test and refuse inspection of the Works and personal intercourse. In commenting on the appointment of Lt.-Gen. von Kunowsky, I urged that the members of the Spandau management—as my opponents—and that gentleman in particular should not be included among those who accompany you, and, in order to be able to deal freely and openly with the guests invited, I must—unpleasant though it is to me—confirm what I then said. Your Excellency will not take my frankness amiss, and will not expect me to be lacking in candour for the sake of politeness.—I again press your Excellency to come yourself, and to bring your son with you.

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[1] The engineers Richter and Beyer, with the assistance from 1864 of the artilleryman Gross, were in charge of Krupp's gun-manufacture.

Berlin, 9.4.1866.

Von Roon, Minister of War, *to* Krupp.

I venture to ask whether you are willing, out of patriotic regard to present political conditions, to undertake not to supply any guns to Austria without the consent of the King's Government. Your personal assurance will satisfy me. If, however, there are considerations of any kind which prevent you from entering into such an undertaking, kindly be so good as to acquaint me at a very early date.

Essen, 13.4.1866.

Krupp *to the* War Minister, von Roon.

Your Excellency,

I was away yesterday, but to-day I have the honour at once to reply most obediently to your kind letter of 9th inst.

In the first place, I beg to state that the first specimen gun in connexion with the Austrian 8-inch order has to be delivered at the beginning of June, and the fulfilment of the contract is not due to begin until six weeks later. This fact will, I hope, allay anxiety ; in any case it will suffice for an assurance that, without any necessity for a declaration on my part which might amount to a breach of contract, not a single gun can get to Austria without the consent and against the wish of the home Government. With reference to a conversation which took place on this subject, your Excellency will attain your object without any conflict between my patriotism and my reputation abroad.

Of political conditions I know very little ; I go on working quietly, and if I cannot do that without disturbing the harmony between love of my country and honourable conduct, I shall give up the work entirely, sell my Works, and shall be a rich and independent man.—I may remind your Excellency that I accepted the order for Austria at a time when the relationships between the two countries were of the most friendly nature, and with all the more thankfulness just then since the Prussian navy disapproved of my crucible steel as a gun-material, and the leading expert was working for the introduction of bronze instead of crucible steel. I at once made your Excellency, and even His Majesty the King, acquainted with the order received from Austria. We are, thank Goodness, after all not yet at war, and may God grant that we remain at peace.

Whatever turn destiny may take, I will in any case keep your Excellency informed of any consignments for Austria.

In conclusion, I beg that the above remarks may meet with a favourable reception, as an expression of my personal sentiments.

The Hill, 3.5.1866.

Krupp *to the* Gun Department.

Starting from the assumption that with the largest calibres it is of the greatest importance to attain the greatest effect with the least relative strain on the gun, we need to establish more exactly the proportions of the gun in every direction, the most appropriate quantity of powder for a particular projectile, and the nature of the powder.—As regards the last point, we may, perhaps, on the basis of the most recent experience, accept prismatic as the most suitable.—If, however, with the present lengths of the guns, the force of the powder is not entirely utilized in the case of *granular powder*, we may assume this to be all the more so with *prismatic*, and (in the absence up to the present of any determination of the difference in definite figures) we might at least assume at once that guns intended for prismatic powder must be of greater length for the purpose of completely utilizing the force of the powder. We must not be satisfied with reaching a distant object with as much certainty as other guns, in spite of loss of efficiency, but we must be the first to produce the *most perfect* gun, which will allow of any desired reduction of the charge if the projectile is not to be carried further than is done by guns of other types.— . . .

Berlin, 18 and 20.5.1866.

KRUPP *to the* PROKURA.

I am still hoping to have a simultaneous conversation with Bismarck and the War Minister, and shall do all I can to bring this about in order to say what has not yet been said—to put forward my complaints and my objections to the existing arrangements. I keep returning *ad nauseam* to the point of honour, since it is to my interest that they should all know that we place honour first (and are not merely commercially minded). . . .

Postscript.

I have been with the War Minister, and told him that I was with Bismarck yesterday, and that I expressed to him my anxiety about the lack of promptitude in the provision of large calibre guns, and so on.

He was glad to see me, in order to tell me that yesterday he received a draft letter from the Admiralty, in which there were again a number of reservations, so that once more no settlement is in sight. They are making difficulties about the insertion of the obturating ring, want a split wedge, and so on. He said that he had, however, decided that no change was to be made, and was asking for an explanation why no order had yet been placed, when he had given instructions to that effect 6 weeks ago.

Well, that was grist to my mill.

I said something to this effect :

" With these gentlemen you will never get anywhere, and I can only urge you, in spite of the others,[1] to decide, in consultation with your practical experts, what must be done.

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[1] i.e., in spite of the naval experts, who were mostly declared adherents of the English muzzle-loading system, and also strong opponents of the Artillery Testing Committee.

My people are already utterly sick of negotiating with the navy ; they are accustomed to quick decisions in business, with mutual confidence. . . . Your Excellency will remember that last year you placed 1 million at my disposal, when I applied for such an advance, and this was to have been paid by the Treasury, had not the other solution of an advance on deliveries been found.

" No further condition was attached to the payment ; it was settled that I could have it if I needed it in 1 to 2 months' time—the sum remained at my disposal in case of necessity without further explanation or condition.—I have only taken advantage of it to the extent of the out-of-pocket expenses in connexion with the orders, and up to the present moment I have not covered myself, as the expenses begin when the raw material is obtained, and have been in great part incurred by the time the castings are finished. Now I find that a further payment, which was applied for, has been steadily refused by the Admiralty, and that has much annoyed my people," and so on.

The Minister said that he knew nothing about it, that it was contrary to his wishes, and just talked to pacify me.

I was at Prinz Fried. Carl's and the War Minister's, and yesterday evening at Bismarck's. Since I had heard that war with Austria is imminent, I made it my duty to tell him *incidentally* that we have considerable orders for Prussia and are still in negotiation for others, but that it will take a year to carry them out, and that I am very much worried about the position of affairs, because *now* and *for a long time to come* we in Prussia possess nothing in the way of effective heavy artillery for coast-defence, fortresses, and the navy. That evidently startled him, which was what I wanted.—He urged me not to supply the Austrians with their guns too quickly. I said that we must safeguard our reputation abroad, and fulfil obligations which we have undertaken. The order was accepted with the knowledge of our War Minister, at a time when the Admiralty had subjected my products to unjust criticism and abuse, and when proposals were being made to give them up.

He consoled himself for the present with the fact that the Austrian guns might well be intended for Austrian forts and against Italy ; however, " Take care whom you trust," for, when they are ready, if we go to war with Austria, I quite believe he will seize them.—

My remarks evidently made him anxious—that was what I wanted, and I now feel free—I will give the King, too, something to think about—no one in the War Office dares to, lest they should be blamed for not having taken steps in time, and I am quite certainly doing it against the wishes of the Minister, but I shall tell him again to-day that I am not doing it behind his back. . . .

Chnast, Bohemia, 9.7.1866.

General von Voigts-Rhetz
to Alfred Krupp.

I am writing to you to-day from a wretched little place, the name of which you have certainly never heard, any more than I had. But that is the fortune of war : it throws one into unknown spots, which one would never otherwise have seen.

Now, firstly, my cordial greetings, and please convey my very kindest regards to your respected lady, whom, as well as yourself, my dear friend, I thank from the bottom of my heart for your hopes for our success. When the battle was over, I could only shout the word " Victory ! " to you, and that was enough, too, at that time. You knew that we had overthrown the proud Austria, and you were particularly concerned, apart from your patriotism,—for you have helped us in the most effective way, with your guns. These children of yours conversed for long hot hours with their Austrian cousins ; it was an artillery duel with rifled guns, highly memorable and interesting, but also very destructive. One of your children, indeed, was wounded. A 4-pounder got an enemy shell on the barrel, which was torn at the side, a long strip being knocked out so that the inner tube was laid bare for some 3 feet. The rest of the gun held firm. . . . The result of the battle —apart from the demoralization of the Austrians, which was shewn by General von Gablentz appearing twice to ask for an armistice in order to treat for peace—is as follows : 20–25,000 prisoners, 20,000 dead, wounded, missing (very many officers), 7 flags and standards, 160 new rifled guns, and large quantities of stores. . . .

11 o'clock in the evening.

Early this morning I was interrupted, and could not write further; then came a march in the Olmütz direction as far as Reichenberg, and, as soon as we arrived, a journey to General Head Quarters at Hohenmaath, where Prince Fr. Carl wanted to see the King, and I had to talk to the Chief of the General Staff and arrange about the new operations. So I am again writing in the evening to you, my best of friends, but do not know whether I shall manage to finish my letter. Moreover I am frightfully tired—I am almost ashamed to say so,—for at night there is little time for sleep, and in the day I am in regular training. I was told at General Head Quarters that 198 guns were taken on the field of battle, many more than I stated above. . . .

Essen,[1] 30 July, 1866.

KRUPP *to the* WAR MINISTER, VON ROON,
BERLIN, *or at the Head Quarters*
of H.M. the King.

Private. Personal.

Your Excellency,

In the midst of my joy at the wonderful success of our incomparable army, I feel obliged to confess my deep grief at the news, which I have just heard, that in the case of two 4-pounders the breech flew off in the action, and that the same thing has happened in Berlin with a 4-pounder and a 6-pounder. Although in all these accidents with field-guns it may be found that the cause lay partly in the bearing-plate first breaking, owing to its unsuitable material (which material was not supplied by me), nevertheless a mishap of this kind ought not to be enough to destroy the gun and endanger those serving it;—and the wish to remove the mischief once for all is the reason for this my most obedient letter. No further proof is needed that the weakening of the gun is due to the rectilinear angles of the breech-block slots. —All without exception have torn away at the same spot. I had the honour to explain to His Majesty the King, in your Excellency's presence, the difference in the effect on the breech of the gun, according as the shape of the breech-block base is more or less angular or round. The proofs of this have since been abundantly furnished in practice. Taking advantage of experience, the breech mechanism will now be the strongest part of the gun, so that, when bursting is intended and the charge is correspondingly increased, the strongest gun, constructed on the best up-to-date principles, will burst at the powder chamber rather than at the breech. Proceeding on this assumption, I am desirous of changing for new ones all guns which have not the rounding-off of both angles of the breech *which has now been adopted*. . . . I assume that the 4-pounders[1] in use in the army with angular slots cannot, on account of the considerable amount of use to which they have possibly been subjected, be altered with the same full degree of safety as unused ones, and I am prepared to supply new ones instead, with the breech and the breech mechanism made to a design which permanently guarantees their duration, and even the impossibility of such accidents. I shall be glad to undertake this with all the means at my disposal, and would prefer to exchange many hundred guns, quite free of charge, rather than continue to have to bear the apprehension of fresh accidents of the same kind repeating themselves, which would not only deprive the artillery of its confidence, but also could not fail to injure the reputation of my establishment to an undeserved degree, since people will be only too inclined to continue to seek in the material the fault which lies solely in the shape.—May the good God give us peace, and then, when we no longer need these guns so urgently, the proposed exchange will, I hope, be found agreeable. That is my request.

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[1] It is doubtful whether Krupp was actually at Essen; the letter may have been sent by him on the journey to Switzerland which he took about this time.

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[1] These guns were the 300 4-pounders of Bessemer steel made in 1864 (see the letters of end of March and 25.12.1864).—The whole 300 were later on replaced by Krupp by crucible-steel guns free of charge (Field-gun C/67)

Ouchy, 27.11.1866.

KRUPP *to* A. PIEPER.

I have heard by telegram that you have recovered and are back again, and hope, for the rest, that you are also satisfied with the tour and your experiences in Paris.

My best wishes to my friend von Neumann and the other gentlemen. According to newspaper reports, breech-loaders have been condemned in England, and muzzle-loaders returned to for exclusive manufacture there in future. This fact may tend to engender distrust of breech-loaders in distant nations and in all those which do not test for themselves and still regard England's example as paramount. The factories which are now beginning to occupy themselves with crucible-steel guns will advertise themselves, side by side with us, in print and in writing in all countries of the world. I think therefore that *now* is the time for accurate accounts of our Works, written by authorities, to be circulated regularly and repeatedly through journals which inform the whole world. We can provide the material for this, and, in so far as we do not find suitable authorities prepared to assist, we might put ourselves in touch with the appropriate editors of respectable newspapers. The age and history of the Works, their achievements in gun-manufacture since 1847—the development of this, the States which have equipped themselves with the guns (and that up to the present moment all of them only have and are only prepared to have our products, in consequence of their satisfactory experience with them and well-founded confidence in them). The splendid achievements in accuracy of aim, endurance, and in particular the breech mechanism and its advantages. The great numbers of orders and the huge equipment ; all this (as well as a picture of that Paris Exhibition) should in the first place be touched upon in a condensed description, accompanied by an announcement of further treatment of the subject in a regular series of detailed accounts and thorough explanation, so that a continuous publication of interesting points should thus be started. . . .

Nice, 2.3.1867.

KRUPP *to the* FIRM.

The consequences of the discharges and reductions of wages must already be very far-reaching if a public declaration on our part has become necessary for the peace of mind of the men and the credit of the establishment.[1] It would be a great misfortune if a public declaration of this sort should ever become necessary for such purposes, and I should always expect it to have the contrary effect. It is possible to introduce gradually alterations and reductions which would cause a revolt if carried out all at once. There is no need to go too fast, since we have no shareholders waiting for their dividends, and, as there is nothing of that sort, and a slight increase of annual profit is of less consequence than a solid and contented body of first-class workmen, we must, in order to maintain our standing, put all, both officials and workmen, in a better position than others do . . . whose industry is actuated merely by greed. Any announcement which looks like an excuse will be taken advantage of to make charges against us, and the credit sought to be gained will, on the contrary, be lost. At the moment we need more than ever that our credit shall not be shaken, and I am therefore afraid of the consequences of newspaper declarations of this sort, which can only make it look as though the establishment feels that it is bound to do something for its reputation and credit.

Nice, 8.4.1867.

KRUPP *to* A. PIEPER.

With reference to certain discussions, I will explain my views, as desired.—

In the event of war,[2] I am prepared to do all in my power that can be of service. Last year the War Minister did not feel inclined to accept my offer of a free exchange of those 400 4-pounders with weak breech and angular breech-block slot, because the experiments suggested that this would not be helpful. I should now be glad if something else were deemed worthy of acceptance, and in this case I should like you to proceed at once in due form to offer the gun just finished (1,000-pounder) to His Majesty the King as a free gift. I believe that this one gun will suffice to protect a harbour against the most formidable weapons and attacks of an enemy. . . .

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[1] The Prokura had proposed something of the kind ; the general business situation at the time made reductions necessary.

[2] The " Luxemburg question " had increased the tension between Prussia and France.

I leave it to Herr Pieper to settle matters at once with his colleagues to the best of his judgment, and enclose a letter to you for use as necessary in case they want to make a pleasure trip to Berlin on that account. You can begin at Düsseldorf with the Prince von Hohenzollern, asking him the question and shewing him this letter, and you can tell him about the Works on the excuse of a call with the enclosed letter for him. If you then think fit, go also to Voigts-Rhetz, the War Minister, the Crown Prince, and Bismarck, and with my message to the King to offer the gun. . . .

Credit and goodwill will be the fruit which this seed will grow for us, even though the patriotic purpose were not fully realized or appreciated. In spite of all, even opponents will bow before so fine a deed, as it will be regarded by everyone, and the effect in our favour will extend over the German States, Ministries, and Princes.

I await your opinion as to the occasion and method of offering the second gun, if we do so, to the Emperor of Russia. With a prompt act of this sort at the right moment we may defeat machinations on the part of others ; I feel that all, Todleben among the rest, will take our side firmly with the Emperor if we thus, with an entire absence of self-interest, when our business with Russia is concluded, tender such a gift in humility and gratitude, and I leave it to you to start correspondence on the subject with Barantzov at an opportune moment. . . .

Now I have had enough of writing and reading for a long time.

Schevingen, 13.9.1867.

KRUPP *to the* PROKURA.

To be brought up as may seem fit at a future opportunity.—

I will merely confirm in a few words what I have discussed with Herr Pieper.

The state of my health does not permit me to trouble myself with the business of the Works ; the most I can do is to correspond with the Prokura when my views are not known in cases and considerations which may arise, and in all material instances it is agreeable to me to be asked, in order that nothing may happen which is contrary to my views.

Painful as my present condition is to me, I regard it in one way as a useful transition period from a life of activity to the eternal world to come ; I can in my lifetime convince myself how the establishment will be conducted after my death, and, in so far as regulations are still lacking to the perfection of the whole, the need will meanwhile become apparent and will be met. In such circumstances, I must assume that all Heads of Departments and the other managers in the Works are giving with all zeal to the Prokura, as formerly to myself, all information needed to enable decisions to be arrived at in regard to normal working or new methods, plant or the like. The gentlemen of the Prokura have full authority, in view of my confidence that they will arrange in accordance with my policy and views, to act in my stead, and their decision is always to be regarded as mine.

No one is to raise the question whether I have agreed. Should anyone try to do so, this should be regarded as an act contrary to my instructions, and should be dealt with accordingly. Should anyone put forward an alteration in this regulation as a condition of his agreement to the renewal of his expiring contract, it is laid down for such a case that nothing shall be altered ;—even if on that account the contract is not renewed. And on the other hand I will not silently release anyone from his contractual obligations towards the firm as regards remaining and fulfilling the conditions. No premature resignation will be permitted, and

I should merely regard a request to that effect on the excuse of lack of harmony with the Prokura as a pretext for a transfer to another position with a view to making profit out of experience gained in the Works.

Krupp's second stay in Nice in the winter and spring of 1868 was interrupted by disturbing news from his Berlin representative. The growing navy of the North German Confederation was faced with the decision as to the gun to be chosen for the heavy armament of the new frigates, and the naval officers were strongly in favour of the Armstrong muzzle-loaders which then reigned supreme in every fleet and were designed for all classes of mounting to suit shipboard conditions. After his successful supplies of 8- and 9-inch guns to Russia Krupp considered it a point of honour to arm the German navy also, and thus arose a conflict which took him personally to Berlin and thence to Petersburg. The victory over Armstrong was hard-won—it actually needed the emphatic testimony of Russian authorities to convince the King and the vacillating War Minister of the superiority of the Krupp breech-loader—but Krupp won the day, and saved the German fleet from continued dependence on the English gun.

It shows his determination not to rest on his oars for a moment, that Krupp at the same time began designing a new, long-range field-gun, a task which was only temporarily interrupted by the war with France, and which after the war involved him once more in years of conflict for the introduction of this gun. Only in continuous activity in his place at the head of the industry could he see salvation for his creation and his community of workers, which he regarded the more earnestly as a grave and even a sacred mission as the number of workmen and their families in his care grew.

Nice, 25.1.1868.

KRUPP *to* MEYER.

I find myself obliged to write to you from here on business ; the contents of this letter are also intended for Herr Pieper, who either is already there or will soon arrive. You will remember, after Sayn had been promised me by the Minister, Count Itzenplitz, what a struggle I had to get the purchase deeds completed, because intrigues had meanwhile been hatched to deprive us of this necessary basis of our production. You know that I not only corresponded on the subject with Count von Itzenplitz, but that I expresssed *in writing* (as well as verbally) to the War Minister and to Count Bismarck, and even to the King, the need for us at all costs to possess Sayn, if the Works were to maintain their reputation and remain in a position to produce the best material, especially the most tenacious and strongest for guns. Count von Bismarck thoroughly understood and appreciated my case ; he told me at the time that the King was also in favour of granting me the possession of Sayn at the original contract price of 400,000 thalers[1] ; yet I could not get an immediate decision, but had still to wait. Through this long torture of doubt I became so extremely ill and weak that I could wait no longer ; I therefore wrote to Count von Bismarck that I must be assured of Sayn without delay, and begged him to arrange for this, and I would in God's name pay the extra 100,000 thalers—rather than have to continue still in doubt whether I could have confidence or must fear for the reputation of the Works and their future. How well-founded my anxiety was is now proved. . . .

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[1] £60,000.

Nice, 26.1.1868.

Krupp *to* A. Pieper.

In order to overcome all the difficulties in the way of acceptance of the free replacement of the faultily-designed 4-pounders by perfect ones, I recommend you to ask the Prime Minister, Count von Bismarck, for an audience, and to put the matter before him, since the approval can probably be given only by the King. Nobody will understand you so quickly, or give such effective support to a good cause. I have proved this in two cases : once in the matter of the Sayn Foundry, and the other time in 1866 when I was asking for a sum of money to be advanced on supplies to be made, so as to be in any case covered for some time ahead against the eventualities of war. In both cases, his interposition brought about a decision, and he certainly only accorded me his support because he knew me and appraised me as my intentions gave me a right to expect.

Count Bismarck will still recollect my unfortunate state of mind on the occasion of the negotiations about Sayn ; the worry then made me ill and old in the few weeks which I had to spend in Berlin on that account.

The essential thing at the moment is to secure the State's acceptance of the free exchange of the 300 4-pounders ; Roon's deputy, Gen. von Podbielski, cannot do that by himself, so the King must sanction it. It is to be hoped that this can be arranged at once, so that you will not need to stay long in Berlin on that account. I have the additional reason for making the sacrifice, that no Department or person will then ever be called upon to answer for fresh expenditure, for inquisitions of that kind are bound to annoy everyone, and the financial authorities poke their noses into everything. . . . I have no one to answer to for what I do in this way, as I am only placing at the King's disposal what I can afford out of my property, and it is an immense satisfaction to me that I can do so before I retire from active life.

My kind regards to those who are interested in me ; I am tolerably well, but am still frequently troubled with headaches. I await your news. With best wishes . . .

Nice, 4.2.1868.

KRUPP *to* PIEPER.

With reference to yesterday's letter, I recommend you, provided the gentlemen agree, also to inform von Voigts-Rhetz of the intrigues which have been set in motion against the Heads and active intelligences of the Department, aiming at their displacement and the provision of free scope for arbitrariness and stupidity ; you should then comment on the matter in appropriate quarters at the most convenient time to suit our purpose.[1] Sallbach will tell you everything in great detail. We owe it to these gentlemen to break a lance for them. Never before have we attained in Prussia a position of mutual knowledge and esteem, and now, when our relations with the Ministry have become so pleasant, when the best might be expected to result from a common harmonious effort, these gentlemen are to be replaced by others, who will again introduce confusion, and who, however honourable they may be, yet do not possess such a fund of knowledge and experience that they can fill the places of the present men. We have no need to concern ourselves about anyone, so you may speak quite frankly—that at any rate is the due of our self-sacrifice.—When we work for Prussia we lose relatively, although she pays for our goods, since we turn our time and abilities to more profitable account when we devote them to other countries. Consequently, we can certainly claim the right to be heard. I intend at the first opportunity to speak my mind on the subject to the King himself, to remind him that Prussia was so backward because the Department was badly administered, that she is now progressing because it is well administered, and that she will again come to grief if the Department is torn limb from limb. I can say anything to him, because he knows that I only tell him the truth, and that will be the object of my first journey to Berlin. Meanwhile do what you can to counteract what is in train against von R., W., and S.— . . .

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[1] Important changes in the staffing of the General War Department were being mooted.

Petersburg, 8.6.1868.

KRUPP *to* MEYER.

On receipt of your report about the tests carried out in Berlin with a 9″ Armstrong gun, I have already confirmed by telegram that the representations which you put forward on this occasion regarding my 9″ breech-loader were entirely correct. I requested you, when putting this point of view to the competent Authorities, to utter a warning against premature conclusions, and to prevent a glaring injustice in the comparison.

I have now to bring forward the following also.

Armstrong was in the extraordinarily fortunate position of being able, quite independently and without being affected by different schools of artillerists, to establish his system and deal uniformly with the questions of gun, mounting, prejectile, and powder.

I, on the other hand, was faced with that particularly difficult task of producing a perfect breech-mechanism for breech-loaders, after the breech-loading system had been definitely, and certainly not mistakenly, adopted as a principle in Prussia. . . .

I had to devote much time, trouble, and money to the solution of the breech-loading problem. Fortunately it is now solved, and in those cases in which in recent times the breech-mechanism has still left something to be desired, as, e.g., in the 72-pounder with double wedge, or in a 96-pounder with a single rounded wedge, the reason was, in the former case that a double wedge was chosen against my advice, and in the latter, the use of English powder, for which the dimensions of the wedge were not designed. It is not possible to satisfy the most various and changing conditions at the same time ; Armstrong, too, stipulates, if his guns are to be used successfully, for exact adherence to all the particulars for which he has provided in his system.

That equal justice has not been meted out to me, the native manufacturer, is the thing of which I have to complain. Armstrong's wishes have been followed in all details at the trial firings ; he was even allowed to train his gun. I, on the other hand, have never been allowed to do anything but make suggestions, to which, unfortunately, in the present instance in particular, very little attention has been paid, although my suggestions were based upon the most comprehensive and costly experiments. How, then, can there be any question of a parallel, how is it possible on such a different basis to arrive at a precipitate verdict in favour of the muzzle-loader, to prefer the foreign production without more ado to the native one, to throw over at one stroke the years of gunnery study in Prussia, and—as the object appears to be—to accept dependence on a foreign source for the new equipment?

I expressly stated that the Prussian gunpowder cannot lead to satisfactory results with the 9″ breech-loader. It has been shewn, on the other hand, in Essen and Petersburg that with the use of the Russian prismatic powder and rear-ignition, the 9″ breech-loader gives the most satisfactory results and in fact much better results than the Armstrong 9″ gun.—. . . My urgent request that trials might be held in Berlin under equal conditions, my offer to supply 20 cwt. of prismatic powder for the trial, were, however, rejected, it being stated that it was not desired to use anything but the Prussian granular powder; and yet an entirely foreign powder has now been admitted with the Armstrong muzzle-loader; and all those who were not familiar with the facts have been enabled by the latest Tegel experiments to form an entirely unjustified opinion to the disadvantage of my guns. I deplore this all the more since I have been exposed to this unjust condemnation in my own native country, while abroad I find impartial appreciation of the gun question. . . .

It is far from my desire to question Armstrong's achievements; I recognize them fully, and I could not do otherwise than advise the adoption of this system, if something materially better were not available. I ask no favours, if the breech-loaders are to be preferred, but I ask for justice.—I cannot admit that a foreigner should meet with more complaisance than a native citizen, who has established, after years of work, the greatest of existing gun-industries.

I count, with the utmost confidence, on a thorough test, and claim that a decision should not be arrived at until the efficiency of the breech-loader (say in some 3 weeks) has been demonstrated under *the maker's conditions*, for I think that, by my previous efforts on behalf of the Prussian artillery, I have at least earned this amount of consideration, all the more since a premature decision would appear to endanger the interests of naval gunnery in two ways : by running the risk of becoming unnecessarily dependent on a foreign source, while obtaining from thence only a decidedly less perfect and less efficient weapon than can be made at home and than other European States draw from Prussia on a large scale. That the Royal Prussian Navy should not draw its guns from abroad so long as it has an opportunity of obtaining better guns at home, is for me much more a matter of honour than of financial interest. Such a proceeding on the part of Prussia would be, more than anything else, an exposure of the Essen establishment to humiliation in the eyes of the whole world, to prevent which no sacrifice would be too great for me, not even the free equipment of a whole ship. . . .

In view of the pressing nature of the question, endeavour to communicate these representations as soon as possible, in my name, to H.R.H. Prince Adalbert, to the War Minister, to the Vice-Admiral, and to any others as may appear useful, and leave them a copy of this.

Essen, 21.12.1868.

KRUPP *to* VON ROON.

Private.

Your Excellency,

In acknowledging receipt of your esteemed letter of 18th inst.,[1] I have the honour most obediently to inform you that this obliges me now, since the necessary condition of continuous employment to meet a definite demand is not fulfilled, to stop the work which has been for a long time in preparation, and was intended to put my establishment in a position, by the addition of the larger hammer, to be able to deliver, even in the shortest time and yet with perfection of quality, any portion of Prussia's requirements of guns.

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[1] The letter contained a refusal of orders for the navy which were stated by Krupp to be a condition precedent to certain extensions of his Works.

It is true that, in a period of 10 years, a quantity equivalent to these requirements could be supplied with the existing plant ; it remains, however, desirable, in the interests of the State, that requirements should always be ordered in good time. Each heavy gun takes on the average a year to make, and for this reason, and in view of the necessity of assuring that the Works shall be employed for years ahead, it is important to prevent outstanding orders from foreign countries from interfering with the satisfactory compliance with a pressing home requirement. For example, Russia has recently called for the quickest possible completion of the whole of her guaranteed order, and in addition negotiations involving large quantities are pending.

My representatives here, who have succeeded me in the administration of the establishment, did not share my view as to the provision of the large hammer I projected ; they looked upon the undertaking as too risky, and disagreed with me on the ground that the Works were acquiring more fame than useful publicity from large production and the considerable reductions of price already offered. They consider it more advantageous to retain in cash the two millions (for the hammer and as much again for the necessary communication with other workshops) ; they prefer for the future a smaller production of guns at better prices to my proposed extensions of plant, and assert that we shall proceed more safely *thus* than *with* the plant, even if accompanied by a guarantee of much more important orders.

I am always unwilling to part with a pet project, but bow to the inevitable. It is to be hoped that we may never have occasion to deplore the omission of the plant ; in any case, however, I am justified in the eyes of your Excellency, and desire to be so in those of His Majesty the King, to whom I mentioned my intention—regarding the hammer,—since I was confident that I had got over the difficulties when I accepted the altered method of payment on which the Royal Navy insisted.

I am leaving to-morrow for Nice ; I have satisfied myself again to-day that the experiments needed for the settlement of the questions put by your Excellency in regard to the field-guns are being energetically continued.

Nice, 23.2.1869.

KRUPP *to* PIEPER.

Pending your visit, please accept my kindest regards for yourself and for your wife, whom I highly respect both for her own qualities and also for the sake of her fortunate husband.

Colonel Janowsky writes that he has left home, and, since he is going to Paris, it seems to me that he wants to talk to you again at Essen. I think this should be very helpful as regards your negotiations with him. Without repeating what has already been said, I will merely remark that we must mention all the difficulties, in order that Russia may volunteer the maximum concessions.[1] I should by no means like to see the establishment in the hands of an Englishman or some other capable contractor, but on the other hand I do not want either to risk money, or to take capable men away from the Works, or to jeopardize their future by a mania for enterprise. We shall always supply Russia more cheaply from Essen than we could manufacture in that country, all the more so now that the import duties are being reduced.

You have spoken of the two things which alone can move me, honour and prosperity.—I can only agree to the scheme if the maximum of reasonable expansion of our business is guaranteed and the necessary contracts in all departments assured. Large-scale production over there involves wholesale immigration, the transplantation of industrious and competent people ; it follows that a town must be built there, and ten times as much land must be secured to us as at present goes with the property.—We can make great claims in view of the advantage to Russia of becoming possessed of a great and flourishing industry independent of foreign countries. If all financial questions are answered to our satisfaction, other guarantees are then necessary :

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[1] Overtures had repeatedly been made to Krupp from Russia (the first time as early as 1864) with a view to his taking over the State-supported steel and gun works there.

that of the protection of rights and of religion, and the freedom of our countrymen to come and go—an Imperial safe-conduct for all time will be necessary, all the more since the dangers to other nations and religions than the Russian are constantly on the increase. These questions, however, can wait until everything else is settled satisfactory.

The offer for 99 years is no good, nor for 200 years—we must be free from the beginning to dispose of the business, and preferably to be able to transfer the whole thing to whom we please without any hindrance.

Hanover, 8.11.1869.

General von Voigts-Rhetz *to*
Alfred Krupp.

Heartiest thanks for your welcome letter, which I was most pleased to get. I hope this further kindness of yours to me has not had the consequences you feared, and brought on your headaches again. I cannot forgive myself for being the cause of that. I should have been glad to content myself with a couple of lines, if I could only be certain that you would not have to suffer for them. . . .

It was with the greatest interest and the strongest sympathy that the King listened to all that I could tell him about the Works and your immense progress and achievements. I then gave him an account of the completion of the enormous gun, and of the interesting experiments and results with the light field-gun. He was in entire agreement that it is madness to attempt to smuggle bronze back into the field-artillery, and said that he had for a very long time been fighting against the demand from gunnery experts that bronze 4-pounders should again be made. He had called together a Commission composed of all the chiefs of the artillery, and had only approved of the trial after all of them (including Hohenlohe and Hindersin) had pressed him strongly, arguing that, if the guns did not prove satisfactory, they could easily be diverted to the fortress artillery. I then told the King that you had already carried out experiments of the very greatest interest with brilliant results, and that you had succeeded in bringing the muzzle-velocity up to 1,700 feet, and had now no doubts about raising it even to 2,000′. The King at once saw that bronze can by no means be made capable of standing such a strain, which would immediately destroy the soft metal, and that the weight of the gun would, moreover, have to be increased so much that the 4-pounder would be too heavy for field use. He said, too, that he had no intention of introducing bronze instead of steel for the light field-guns. He then referred of his own accord to the trial near Berlin of your gun against the English one, and gave me a full description of the whole affair, with a very clear recollection ; His Majesty got quite excited, evidencing his continued indignation over this miserable experience. When Herr Meyer brought him the news of that malicious piece of treachery,[1] he simply could not believe it possible. He very soon, however, convinced himself of the fact, and took the matter up. It seems that he did not handle those stupidly hostile gentlemen very tenderly. I then remarked to him that that episode would give him an excellent idea of the hostility which our gunnery experts of the old type shewed towards any intelligent improvement that did not proceed from their own out-of-date clique, and of the difficulties which these people placed in the way of any intelligent progress. I quoted a large number of instances, all of which he knew and also admitted. The King recognized with real gratitude how self-sacrificingly and steadfastly you have exerted your energies on behalf of what is best, and he was delighted at the brilliant results that you have again obtained, a trial of which I urged upon him personally. It is a real joy to discuss such matters with the King, as he shews so much goodwill, such sympathy and grateful interest, combined with real understanding. If only he were not continually impeded and stirred up by those people. . . .

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[1] See Krupp's letter to Meyer, 8.6.1868.

The Hill, 24.2.1870.

KRUPP *to the* FIRM.

I have been reading about the strike at the Essen Engine Works. It is of course understood that neither now nor at any future time is any one of the men concerned to be taken on at our Works, however short-handed we may be.—

I hope that we are practising a constant quiet observation of the spirit of our workmen, so that we can never miss the beginning of any ferment anywhere, and I must ask that if the cleverest and best workman or foreman but looks as though he wants to raise objections or belongs to one of those Unions, he shall be discharged as quickly as practicable, without consideration of whether he can be spared.—

Anyone who does as we have hitherto done, and keeps his men so as to provide them with a living in spite of not having enough work for them, runs no risk from a strike.—

The same thing has happened in the coal mines, where, at a time when business was brisk, and extensive engagements had been entered into, the resulting difficulties of the employers were suddenly used as an opportunity for putting forward concerted unreasonable demands and obtaining at their cost advantages, which, but for the pressure thus exercised, could not possibly have been offered.—Any such mean proceedings must be countered with the utmost energy, and we must let everything go to smash rather than give in. We shall make sure by our care for our people and our foresight in watching over them that events of this kind cannot happen with us ; should, however, this epidemic threaten to break out with us as well, no weakness must be shewn, and no regard for a serious temporary loss must move us to depart from what we have determined beforehand.

The Hill, 12.3.1870.

KRUPP *to the* PROKURA.

To the gentlemen who act for me.

Gentlemen,

Death having deprived us of Herr Pieper, the question now arises how we can best attenuate and avert the blow to the establishment involved in this loss and its inevitably hurtful consequences.—The first essential is harmonious co-operation, and I urge every head of a department not only to deal, as hitherto, with questions addressed to him, but if possible more than before, even though briefly, to call attention to anything that appears to him of value in the sphere of his department and in connexion therewith, in order that nothing useful may remain unconsidered or neglected. . . . This not only applies to the Works, with their technical and commercial administration and working, but I want each of the external representatives as well, just the same as the heads in the Works and the office in Essen, to put themselves mentally in Herr Pieper's place, and, instead of the suggestions which used to proceed from the deceased, to address conversely, in replacement of him, similar propositions to the establishment, whenever such action appears useful. Even if the point is not at once taken up, let everyone shew himself persistent in repeating his propositions, and tireless in carrying through anything that seems of value.

The Hill, 16.3.1870.

KRUPP *to the* PROKURA.

I am still waiting for news of satisfactory results with the Siemens-Martin steel process, and for proposals for the utilization of the process on a large scale, as soon as it can possibly be determined whether the method is sound, whether it produces a reliable material and can be adequately directed and controlled. I want full information on the various facts relative to plant, space, size, duration, cost of plant, net cost of the product in comparison with other steels—necessary and sufficient raw material, and so forth ; in particular, whether we can make any substantial saving of Sayn ore in the process, and whether the product, when hot, is sufficiently tenacious and workable to be able to be finished in great part in the rolls.—Some time ago, writing from Nice, I explained at length why I want experiments to be made with peat, to find out what is the cheapest usable quality obtainable locally, and what medium and best quality of peat is necessary, or would or would not suffice, to produce the gas for melting the steel. I have had no news about this, or at any rate no results. There are plenty of other questions still open, to which I shall return.

1870 to 1876

1870 to 1876

The war which broke out in July 1870 found Krupp still in a precarious state of health, in spite of the three winters spent at Nice—busied with a series of important and difficult tasks. In the Works, the Siemens-Martin steel process, after lengthy experiments, was nearing the stage of large-scale production, and offered a prospect of a revolution in steel manufacture. The gun-shops were occupied with the experiments on the new field-gun, greatly impeded by the lack of a large firing-ground of their own and the unaccommodating attitude of the military Authorities. On the Hill estate the foundations were being laid of Krupp's spacious new house, designed to be visible evidence, to himself and his neighbours, of the standing of his Works. The outbreak of war drove him from all these occupations to the service of his native land. His best assistant during the last ten years, Albert Pieper, the chairman of the Prokura, had shortly before this been taken from him by death, and was regarded as irreplaceable by Krupp and the other chiefs. Nevertheless, inspiring all his staff to increase their efforts, Krupp turned unshaken to face the heavier tasks of the future.

Essen, 4.7.1870.

KRUPP *to* TREASURER KRAUSNICK,[1]
BASSENHEIM, *near* COBLENZ.

Feelings based on respect cannot be changed by time and circumstances. I have retained my old friendship for you and my interest in you, although it is a long time since we saw one another.—

It is a great grief to me to hear that you are in poor health; if it is any consolation to you, I may say that this has been the case with me for years. I am very nervous, ought not to write, and shall not get this letter written without a headache to follow. So excuse the brevity. We two sick men would make a wretched couple ; much as I have long wished to see you and to have you stay with us, I am now making you a different proposal. Whilst, with my debility, I am not equal to my business, seldom receive visitors, have not enough strength and activity to perform what the Works and the rebuilding of my house demand from me, I could wish that you would do all in your power to get well. I hope for my part to get stronger and that you will also recover, and then, when we are able to enjoy life together, come with your dear wife and visit us, and stay with us for some time.

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[1] Krausnick (see letter of 6.1.1858) had left the service of the Prince von Hohenzollern, and the correspondence with Krupp had dropped for some time.

Now permit me, as an old and genuine friend, who makes straight for his goal without beating about the bush, to consider one more " but." What I am thinking is that you need a period of complete rest, free of all cares and ties, in the most beautiful surroundings and the best company. You must not think about expense. So I ask you plainly, since I have not the remotest idea how your affairs stand, whether, if of use, you will accept a friend's services ?—For the sake of brevity, I will assume every possibility ; either that you are very prosperous and can without difficulty afford yourself what I suggest, and then you will not be angry with me ; or that it would be inconvenient for you to make a substantial pecuniary sacrifice for the sake of your health, and then please excuse my importunity and do not be annoyed at it ; in that case, pray dispose of me. I will at once place what you want at your disposal, and its repayment shall never inconvenience you.

To put this delicately would perhaps have meant filling reams ; so I just blurt it out at once. Whether you accept or decline, everything is entirely between ourselves. My wish is to serve you, in the way in which I am best able, and to see you well again at the earliest possible date, and then, when we are well, to spend some time with you here, either this year or next. My wife has recollections of old cordial friendship with your dear good wife, who must come too. For brevity, I will mention at once the sum of a thousand thalers, which I place at your disposal, to be accepted or declined without ceremony or hesitation, all on the assumption that one friend does not take anything amiss from another, not even a mistake or a blunder, if the intention was not bad.

With my best wishes and regards, I await a *short* reply without *circumlocution*, just as I make the proposal.

Essen, 20.7.1870.

KRUPP *to* VON ROON.[1]

Your Excellency,

I venture to call to mind my earlier assurance that, in the event of war with France, I should desire to supply crucible-steel guns to the value of a million thalers[2] as a contribution to the country's war expenses.

I gladly seize the present unhappy occasion to redeem that promise (which the Luxemburg affair of 1866–67 induced me to give).

I shall be obliged by this offer being kept strictly secret.

God protect Prussia !

The Hill, 27.7.1870.

KRUPP *to the* FIRM.

. . . Finally, I also urge . . . the utilization of outside assistance and other factories for any of the work, as may be useful, as well as the exertion of the utmost effort here towards completion, working day and night in every shop with all the men and machines at our command, shrinking from no expense or sacrifice. Other work for railways, wheels, axles, etc., should be let go in favour of this, so that at the earliest moment at which our productions can be of use, we shall have them ready, and shall be able before anyone else to perform the first service, if the moment should arrive when guns or mountings are anywhere lacking, and other prospects and promises are not realized. In facing this gigantic task it should also be assumed that the mountings promised by Gruson will *not* be delivered by him, and we should not

[1] On the day after the declaration of war, this letter was given to Meyer personally, in Essen, to hand to the War Minister.

[2] £150,000.

only reckon to fill that deficiency, but also, in totalling the whole of the guns without mountings, we must add in any further ones which can be completed here within a certain period. Similarly, let us prepare the maximum number of projectiles which can be of use for our guns in the event of an action on the largest scale. In addition to the 9-inch guns, we should reckon on the employment even of the partly-made 11-inch ones. Independently of whether this proceeding finds favour with the Authorities, whether it is approved of, whether the result of our efforts is accepted, and still more independently of whether any payment for them is ever made, I expect from the patriotism of everyone whose services are devoted to this end, that he will think of nothing but the conceivable emergency in which our work may be justified and be of irreplaceable value to the State. I therefore count on the utmost activity and on prudent reflection.

The Hill, 26.9.1870.

KRUPP *to* LOERBROKS.[1]

It looks more and more as though I am to be disappointed about the definite early completion and roofing of the two buildings.[2] I always get a belated explanation of the latest lack of activity ; now I am constantly being told that Messrs. Funke and Schürenberg have repeatedly been reminded to send some men. Explanations and excuses, however, do not satisfy me ; I want to see the building finished in time, and the assurances fulfilled, and whatever more is necessary must be done to-day to ensure that the building is completed even if, instead of the present fine weather, it should start raining. So much that could have been done rapidly has dragged along for lack of energy, but now it is no longer possible to look on quietly while what is needful is being neglected, all the more since it becomes daily more and more of a feat to deal with the enormous balance of work in the short space of time remaining.

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[1] Member of the Prokura from 1867 to 1877.

[2] Krupp wanted to have the two main buildings at The Hill roofed before winter set in.

Please take steps to ensure (in agreement with Messrs. Kraemer and Schwarz[1]) that the building operations here shall in any case proceed with adequate activity to ensure completion, even if we ourselves have to collect a gang of workmen and finish at least one building ourselves—at any cost, even by deferring jobs at the Works, if Messrs F. and S. cannot, or in other words will not, help. Words and promises will not satisfy me, I expect deeds, and I shall take care that anyone who shews himself too weak to fulfil his promises, or who once imposes on me, shall have no chance to do so again.

In conformity with what I have said before on this subject, please do me the favour of acting categorically in my place, I will not interfere again and upset myself further. Oblige me by putting this matter through.

Rugy,
before Metz, 5.10.1870.

GENERAL VON VOIGTS-RHETZ *to*
ALFRED KRUPP. (*Fragment.*)

The time which I have had at my disposal up to now has been so limited that it is only to-day that it has become possible to send you my heartiest thanks for your welcome friendly letter, for which I am all the more grateful because I know that writing is a great trial for you, since it injures your health. So the pleasure of hearing from you is always bound up with the regret that you must suffer for the sacrifice made to friendship. No day, no hour passes but I think of you with the truest devotion, and rejoice with all my heart in your friendship and affection ; if these thoughts were all written down, they would soon fill a whole library. It is quiet to-day on our fronts, and I hope that the French are not hatching some evil plot behind the thick layers of fog which cover the broad valley of the Moselle. Of late they have been lively all the time, and although the fights arising from their enterprises have been little more than unimportant affairs of outposts, it is necessary to be prepared for every eventuality. . . .

[1] The architects of The Hill.

Twice already, Bazaine has tried to crush my neighbours on the left, but the prompt appearance of an imposing force of artill. and infant., rapidly brought from the 10th Corps over the bridges which I have thrown across the Moselle, has demonstrated *ad oculos* the uselessness of a continuation of the attack, and has caused Mr. Bazaine to withdraw again to the security of the fortress. In the outpost fighting in front of the 10th Corps, which for that matter has a very exposed front, the losses have not been great—2–300 men in all,—but every single man is to be regretted, and I exert myself as far as possible to spare this asset entrusted to me.

The chest full of valuable cigars, which you, my dearest friend, were so kind as to send me, arrived safely,—my heartiest thanks and those of the whole of my numerous staff for them. You have provided us so plentifully with the choicest brands that we can revel in them even through a very long campaign. . . .

Yet not for myself and my staff alone, but also for the the whole of my army corps, I must send you, my respected friend, my most cordial thanks. You have repeatedly engaged with such endless profusion in the charitable work of providing refreshment and warmth for my soldiers, that the best results have not failed to follow your good deeds. . . .

We have, indeed, not been entirely spared by the principal enemy of armies at war,[1] but our bill of health was a better one than in any other corps, until the provinces concerned followed your example and began to attend to the strengthening of their people as well. We had set up at once in Maronge and Brouveaux storehouses under special control, which alone made it possible to arrange for a fair distribution of the gifts to the regiments. . . .

I believe, too, that we have succeeded in achieving at any rate approximate equality. Many troops, which were supplied direct, had to produce to me what they had received so that one should not luxuriate while another starved. There is, too, general recognition and gratitude in the corps. . . .

Our battles, which have already proved the superiority of our artillery to that of the French, and have repeatedly shewn this arm to be our best defence against the Chassepôt rifle, would be still more successful if we already had the 1700′ muzzle velocity, the possibility of which we owe to you. I hope this war will give the death-blow to our present ordnance department ; at any rate it will not be my fault if the King is not told the plain truth in this connexion. The bronze humbug will then come to an end too. It seems already clear, from both a military and a political point of view, that Paris will not be so easily taken as the optimists thought and still think. The more the anarchy there increases, the more the voice of reason will die away ; confronted with mob terrorism, sensible people will not venture into the daylight, and we shall have to come to a siege in order to curtail the matter. You will in any case decide the issue, with the gun which you have given to the army, and most easily if the great giant gun could put in a few words. It would, however, hardly be able to travel on the new line Remilly-Pont à Mousson, as that is too new and uncertain. And the many blown-up bridges on the way to Paris make one hesitate. If we should yet be in the position of having to besiege Metz, the gun would most decidedly be just what is wanted here against the detached forts. Now the shells from the French rifled 36-pounders are flying about our ears at 5–600 paces.—The fame of your private hospital, which has already done so much good, has reached us even here. You think of everything and for everyone.

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[1] Enteric accounted for 60% of the German deaths from disease in the campaign.—Translator.

Essen, 15.11.1870.

Krupp *to* von Roon.

. . . When at the commencement of the present war with France it became necessary to visualize the possibility of our country getting into serious difficulties, I offered your Excellency from the resources of my establishment a not inconsiderable portion of my property to be gratuitously disposed of at your pleasure, with a view to supporting our defence against the enemy and to contributing to the losses of the State in accordance with my capacity. Thanks to the incomparable deeds of our brave army and its tried leaders, a pecuniary loss to the State is not now to be anticipated, but on the contrary an increase of its strength will certainly take place. My offer of gratuitous supplies of artillery material for the war with France has, for this reason, only been availed of to a slight extent by the Admiralty, while the General War Department has up to the present made no use of it. This fact has led me to carry into practice as much as possible through activities of a different kind (support of the soldiers at the front and of the families left behind, equipment and maintenance of hospitals, &c.) my eager aspiration to be of service to my native land, and—apart from other things, which I hope to do as well—I should gladly be prepared not to claim the sum which the work on the conversion of those guns[1] in my establishment would cost—roughly about 120,000 thalers—but *to make over this amount to the Victoria National Foundation for Disabled Soldiers.*

I should deem myself fortunate if this proposal might meet with approval, and I most obediently request your Excellency to be graciously pleased to order the conversion of the above 24 guns *very soon.*

Crucible-steel Works, 2.1.1871.

KRUPP *to* VON ROON,
at VERSAILLES.

Your Excellency,

I have had the honour to make the following telegraphic communication this day :

" Assuming possible utility before Paris, am putting in hand at my own risk in order not to lose time six smooth-bore crucible-steel mortars, of 21½ inch calibre, 60 degrees elevation, 300 cwt. weight, for 60 pound charges and thousand pound bombs with 60 pound exploding charge, effective at five thousand paces, together with mountings, transport waggons, and six hundred projectiles. Hope to complete two mortars about middle February. Further details in writing. Should such mortars not be usable, request telegraphic advice by return."[2]

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[1] The conversion of a number of the older heavy guns to the hooped type.

[2] Krupp's offer was declined.

I have only now come to this resolve since doubts—whether well-founded or not, I cannot judge—have been bruited abroad, whether the available means can assure the successful capture and occupation of Paris, whether on the other hand certain forts, especially Mont Valérien, will not for a long time continue to dominate the city, and whether serious sacrifice of time and men will not have to be made to prevent such a retardation of the ultimate object. I am convinced that no structures above or below ground can withstand the mortars now put in hand, and in particular, that they will destroy vaultings and inner spaces by the weight of the impact and the force of the explosion. Only the desire to be of use as far as possible, to obviate sacrifices and promote success, has decided me, without waiting for an order, to set everything in motion to this end immediately on arriving at this view, neglecting all considerations of other commitments of the establishment, and inspired only by the single concern for my country. If my action may be expected to be really of service, I can only regret that my previous ignorance of the state of affairs did not admit of such reflections and decisions at an earlier date, and that, for that reason, these guns cannot be offered forthwith in a completed state.

Victory brought Alfred Krupp not so much the satisfaction of realizing the decisive part played by his guns in the struggle with France as the conviction that the main task of the future was an early and considerable improvement of the German artillery. The French, conscious of their inferiority in the artillery duels, would put all their energies into a rapid re-arming, and if the victory won was to be retained, the first condition was to be ahead of them. But there was a wide divergence of views in the Prussian War Office, and a sharp struggle ensued as to the necessity and the manner of re-arming. About the same time there arose also the question of Krupp's own firing-ground, which he was determined to have in order to free his experiments from the "snail's pace of departmental authorities." The industrial boom after the war, increased anxieties for the welfare of his growing body of employees, the commencing struggle with social democracy, and finally the reorganization of the management and routine of the Works, set Krupp an unexampled mass of tasks in the years after the war.

Berlin, 13.4.1871.

KRUPP *to* COUNT MOLTKE.

Your Excellency,

I beg most obediently to inform you that I contemplate starting a trial ground for guns of all kinds, seeing that, with the degree of efficiency which has been attained and the further improvement which still has to be aimed at, there is no available place in the country which is adequate as regards safety and observation.

The site needed should be approximately 2 German miles long, 1 wide, uninhabited, uncultivated, not intersected in the middle by roads running down the length, as flat as possible, situated on a railway, and near my establishment or at least near the governmental district of Düsseldorf.

In the conviction that the question of the availability of such a ground cannot be so decidedly dealt with anywhere else than in your Excellency's Department, and in the belief that the matter is of interest to you, I beg that, in case you are inclined to support the execution of this project by supplying information, you will be pleased to state to which office I should address myself.[1]

To avoid any ambiguity, I may add that I intend myself to defray the purchase price of the ground, as well as the cost of the buildings, workshops, casemates, and so forth, to be erected. For the rest, I am known to His Excellency the War Minister, Herr von Roon.

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[1] In Moltke's reply, dated 14.4.1871, it was " suggested to Krupp that he " should apply to His Excellency, War Minister von Roon, in regard to the matter in question, since the decision on your offer pertains to the Department of the Royal War Office, to which also enquiries as to the availability of artillery firing-grounds are accustomed to be addressed."

Berlin, 17.4.1871.

KRUPP *to* VON ROON.

. . . In these and other existing circumstances which impede success, I am determined for my part to do my utmost to promote promptitude,[1] and in the first place to put down a contribution of 25,000 thalers[2] for defraying the cost of the most comprehensive comparative trials, which, it may be assumed, will be held between the different steel and bronze field-guns. I am also prepared to strain every nerve to supply as soon as possible the whole of the field-guns, of the type selected, that may be necessary for the re-equipment of the army—whether 1,000 or 2,000 in number—of the most perfect quality, and I am also prepared to defer my claim to payment for the supply, until the liquidation of the French indemnity provides the means. I will even envisage the possibility of this payment not being made at all, and a fresh war breaking out ; I should then prefer to cancel the debt rather than have to face the risk of our national artillery being less efficient than that of the enemy. I shall be pleased to make the same offer to all the allied German States. . . .

Berlin, 23.4.1871.

KRUPP *to* KAISER WILHELM I.

Memorial, supplementary to programme of 21 April, 1871, regarding artillery.

My proposal for comparative trials of all crucible-steel and bronze field-guns, including the latest improved type of crucible-steel gun, is intended to prevent any surrender to the preference, now making itself felt in influential circles, for the introduction of a still more indifferent gun, a bronze 4-pounder, instead of the improvement of the existing weapon which is necessary. The offer, connected therewith, to supply as quickly as possible, of the type which may be recognized to be best, as many as 2,000 field-guns towards the quantity required for a complete new equipment, on the condition that payment should not be made until the receipt of the French war indemnity provides the means, and even not at all, if instead of that a fresh war should break out, has as its object the equipment, without delay, of Prussia and Germany in a better way than any other countries.

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[1] i.e., promptitude in German arming.

[2] £3,750.

The Minister of War and Marine, Herr von Roon, informed me yesterday, 22nd April, that for the present he would refrain from any definite comment on my proposals, at the same time according special recognition to the lightness with which I treat my own financial interests. The result of great sacrifices and serious consideration appears from this to be looked upon primarily as a curiosity, and to be probably destined to oblivion. That there should be some aversion to my offer is, however, explained by the fact that the decisive voice in the General Department is that of Lieutenant-Colonel Willerding, and that he and the Inspector-General of the Artillery, Herr von Hindersin, with their well-known open opposition to every progress which proceeds from my establishment, and their clinging to bronze, dominate the opinion and the decision of the majority.—There will thus be no readiness to agree to my proposal for a thorough testing, and for the introduction of the most perfect gun without delay, unless, in recognition of the need, His Majesty the Kaiser is himself pleased to order it, just as originally his order was necessary for the first introduction of the crucible-steel gun, and as, similarly, it was only to the interposition of His Majesty that the prevention of the introduction of the English muzzle-loader as the naval gun was due. . . . For the rest, regard for the truth compels the remark that the Russian Government, its artillery as well as its navy, deserve thanks above all for their long and active participation in the efforts to perfect the guns, for their support and confidence, and that Russia set Germany herself the example of appreciating the product of her own country from the crucible-steel Works at Essen. . . .

In my opinion, what is needed is an authority for testing and for harmonious unification of the interests of the two Departments, a special Committee under the presidency of a respected, unprejudiced person of intelligence not subject to influence ; such a Committee should be willing to accept and test such practically useful offers as those proceeding from my establishment may well be expected to be.

As regards the original proposal for a general test of field-guns, which should also include a test of siege-guns, the following facts should be mentioned :

The existing field-gun is unsatisfactory, in spite of its precision and the strength of the material, both of which advantages were so clearly brought out in the late war. The breech-mechanism is too complicated and too weak ; the charge cannot, for that reason, be increased without danger ; a stronger charge of powder is, however, requisite and in keeping with the dimensions of the crucible steel, while bronze expands, even with the present insufficient charge, and consequently, as experience shews, decreases in efficiency and accuracy of aim during use. . . .

. . . The present type of gun stands to the new one in much the same relation as the needle-gun to the Chassepôt ; at a distance at which the Prussian projectile with the present muzzle-velocity of 1,135 feet finds its limit of range, the projectile with 1,700 feet muzzle-velocity has a great further range of effectiveness. . . .

Even if one assumes a materially less favourable ratio for the superiority of the new gun, it is nevertheless obvious that, with such a degree of increased power, the effect must be decisive, and that the present artillery would be annihilated by the new in a fight in which other conditions were equal. Experience, particularly with the recently-tried bronze 24-pounder, should have sufficiently demonstrated that bronze is not at all a good material to use for guns. It will be found that, for equal effectiveness, expansion in bronze will not be prevented by even double the weight which in crucible steel affords the most complete safety, and that the life of the bronze as compared with crucible steel with the same normal charge, with the proportions already accepted for 4-pounders, is not as much as one to four. . . . The employment of bronze for guns is a waste of men, horses, and material, a squandering of valuable powers, which are vainly sacrificed, but which would perform decisive services if equipped with the best and most effective crucible-steel guns.

In spite of all the resistance of hide-bound prejudice, crucible steel has won its present position of being the most indispensable material in war as in peace. Thirty years ago, the introduction of my first crucible-steel barrel for small arms met with the same resistance, just as, later on, the first axles and tyres had to fight for decades against doubt, indifference, and dislike, while to-day they have all been adopted in their entirety. This experience is an encouragement for further persistence.

We live to-day in the Steel Age. Railways, the greatness of Germany, the fall of France, belong to the Steel Age ; the Bronze Age is past. . . .

Berlin, 1.5.1871.

KRUPP *to* GENERAL VON VOIGTS-RHETZ.

I have now been here 5 weeks, and close my stay to-day to return to Essen ; my last business here shall be to give you a report on the object of my stay.

For the sake of brevity and completeness, since the matter interests you, I am having copies made of everything and am sending you the correspondence in an accompanying packet. There is no hurry about it—provided only that you do not lose the papers, so that they get into wrong hands, you may keep them for a free hour weeks or months hence. I will do all in my power to get Prussia better armed than hitherto against every foe, and came here for that reason, to combat the growing inclination of the most influential people to reintroduce bronze guns. I will say no more in this letter, so as not to repeat what you will find in the documents. In addition to the copies of the Berlin correspondence, I am having one taken of a letter from myself to the Essen Works, in less polished language, and will enclose it herewith. From it you will learn a good deal which cannot be said so openly here, but which must be known in order to form a correct judgment.

Not by way of bragging (but only between ourselves), I may tell you that up to the middle of March I had already made or decided upon sheer voluntary sacrifices and gratuitous supplies for this war to a value of 450,000 thalers—apart from those 300 gratuitous 4-pounders—and that this will grow to half a million.[1] For a similar object I would not hesitate to do the same again, if need be. Had the French invaded us I should have been ruined ; so mere egoism with a certain amount of gratitude is the simple explanation.—In the above is included a supply for the Navy and Artillery, a matter of 150,000, which I have already assigned to the Fund for Disabled Soldiers instead of accepting it myself. I find generally that the fighting-men and their dependents are not sufficiently looked after. That those who are the strength of the country should defend the country, without regard to position, is quite right, but it follows that the whole country should bear the consequences of war and impoverishment, and should cover the injury to the individual according to his substance and his loss. Why should not those who fought and those they left behind them be preferentially entitled to enjoy the blessings of success, and to be protected against every mishap which the community can cover ? A tax can do this ; however high it may happen to be, the tax-payers will always be better off than the victims. It is wrong that this task should be left to charity. The wealthiest are not sympathetic and hold back, and the few charitable people could ruin themselves without being able to help sufficiently. It is unjust that those, of all people, who have suffered, who did their duty and have every claim to recognition, should now have to say to themselves that they are supported like beggars. . . . Whence is to come new courage for new dangers, whence patriotism, if people have before their eyes the demonstration that want and care are its reward ? If only some one in a high position could raise this question, how delighted I should be ! Can you not do something towards it ? It is true that it runs counter to the Crown Prince's appeal ; he reckons only on charity ; still, I hope that a proper presentation will put a traditional abuse in the right light. . . .

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[1] £75,000.

Bad Nauheim, 15.6.1871.

Krupp *to the* Firm.

Next year we must again build as much as we are making possible this year, and only then shall we perhaps be able to proceed more slowly for the future, with better houses, with little settlements, which can again be made over to workmen singly, with baths in various places, and a large public laundry for all. Then we will put up, hotel-fashion, one or more lodging-houses for workmen of the better class, with a small room apiece, and dining-halls, billiard-rooms, skittle-alleys, and garden grounds with fountains, so that we can offer everyone a pleasant and attractive existence at the lowest cost. Places of amusement and buildings for instruction, lectures, and so forth, must also be in the plan.

Torquay,[1] 6.10.1871.

Krupp *to* Loerbroks *and the* Firm.

All other considerations—whether L . . .[2] will ever again do good work with us and what expense and trouble we shall incur by suing him—these things are only of secondary importance. We must ensure respect for our contracts and our discipline. A dodger must not have a moment's peace in his indefensible position ; we must attack him with bills of damages and public stigma as much and as long as the law permits. Our contracts must be so drawn up that they can be produced in Court, otherwise we should have no need to make any, and they would be of use only to those who want to gain something *at our expense* by this means. This case is so serious that there can be no question of giving in. Whether the Court criticizes the contract or whether others are judged by it, whether higher salaries are deduced from it and rather more taxes demanded on that account, we shall not abandon so important a pursuit of our rights on account of such minor interests. In addition to kindness and justice as principles in our dealings, strictness is necessary—more than we have in many cases shewn—and if we cannot go too far to please me in recognizing faithfulness, we must, on the other hand, scourge dishonourableness and baseness as much as possible, without fear of the public. If I take pleasure in sacrificing, in the interests of those associated with the establishment, large sums on hospitals, co-operative stores, and other objects and gifts, I do not hesitate for an instant to make any sacrifice to ensure that we shall not be despised for our weakness, whether ten, fifty, or a hundred thousand thalers are risked (please assess the importance from the amounts here expressly mentioned). Ensure the sanctity of the contracts in this and any subsequent case.

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[1] Krupp and his family spent the winter of 1871–2 at Torquay.

[2] An official of the Works, a capable man, who had broken his contract and left.

Torquay, 11.10.1871.

KRUPP *to the* FIRM.

To-day I want to deal with a subject, which has been a great worry to me for a long time. I address this to the Firm, because I want it to be preserved for future reference, so that my son, also, if God wills, may study it later.

Out of the little germ of the Works where raw material was bought retail, where I was representative, correspondent, cashier, smith, melter, coke-breaker, night-watchman at the cementing-furnace, and a *lot* of other things, where one nag performed in its leisurely way the whole of the transport work, where ten years later the water for the first steam-engine installed was carried from the pond by a chain of men when the well had been pumped empty, because a pipe-line was too expensive,—out of that have come, in the end, the present Works. In order to assure a future worthy of them, it is essential that the Works shall have their own independent sources of *ore* and *minerals*, and should extract them and work them as they now draw their water—*pure*, from their own estates, free of agents and middlemen, and under their own uninfluenced control. (We shall have to extend this to graphite, as well as clay and coal, but to-day I want to deal primarily with the question of iron.)—

The past dependence on the various foundries and on the attentiveness of *outside employees and workmen*, not associated with our interests, the varying quality of their supplies and of our product from those supplies, provided the original incentive for the decision to buy the Sayn Foundry, which we then thought, judging from the supplies obtained from it, would furnish us for all time with the best raw material. . . . I was convinced that in this way I was laying the foundation for the most solid future conceivable for the establishment, and so bought Sayn from the Minister ; and never in all my business life, even in times of want, have I spent such days of anxiety as during the 2 months when objections were being raised to the completion of the contract. (The intrigues which then went on, the breaches of undertakings, and the contemptible conduct of people in the highest places shall have a separate account from me later, for perpetual remembrance ; I will only add here that Prince Bismarck did us good service at the time through his appreciation and goodwill, that it was he whom I have to thank for my success, next to the King, who also very graciously assured me of his protection within his power. . . .)

The purchase of the Sayn Foundry has up to the present unfortunately not fulfilled the purpose intended. Müsen pig-iron is still indispensable for us on account of its quality, and our rivals obtain, just as we do, a better raw material from an outside source than we can make ourselves, and they are therefore in the same position as ourselves as regards capacity to manufacture from that source without any outlay for foundry and mines ; they can buy the best iron there under our noses, and even the mines and foundry. It is a miracle that this has not yet been done, if only as a speculation, by someone of those who must know of our dependence.

. . . Even a big revenue from the Sayn Foundry is—without the fulfilment of the above condition—only an illusion. The Works lose ten times the amount of the profit shewn in a favourable balance-sheet from Sayn as a consequence of the supply of an inferior material to the Works. With an inferior quality, the steel loses its money value, and the Works lose their status and goodwill. For Sayn, the principal item in the balance-sheet is *honour*. If Sayn shews no cash profit, but supplies better iron than any other foundry, then it gives the

Works a power, then it fulfils its purpose, then alone shall I be glad to own it, and feel enthusiastic about it ; if, however, we do not arrive at this, it will not be worth the worry it has caused. Finally, in brief, to the management for their guidance : " Cash profit from the Sayn Foundry out of the supplies to the Works, at the expense of the *utmost perfection* of the product supplied, profit from saving costs and fruitful outlay, and from the employment of inferior qualities of iron ore or other injurious economy, might be the ruin of the Works. . . ."

Torquay, 13.11.1871.

KRUPP *to the* FIRM.

How can such sums be put down for such a purpose,[1] without a thought of what waste it is, without palpitation of the heart, without an attack of apoplexy ?— . . .

[After stating how, in his opinion, the object can be attained at a fifth of the cost, Krupp continues :]

On the front page I have made my remarks on the calculation, but only as an example, since the whole conception of this scheme is as diametrically opposed to my intention of economy as it is possible to imagine. My intention was that the water which we do not use, coming principally from the mines, should be collected below the Works for use in emergency, as close as possible and no lower down than can be helped, if the construction of basins at an equal height should not prove practicable. . . . The whole manner of dealing with the question shews me that what I wrote about it has not been understood at all, and I regret all the more this instance of a monstrous misunderstanding, because I certainly should not like anyone to think me capable of such a degree of featherheadedness as is assumed in this scheme. I repeat that I have in mind economy only, and not extravagance. . . .

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[1] This was a scheme for some new reservoirs.

Torquay, 6.12.1871.

KRUPP *to* ERNST EICHHOFF.[1]

. . . By to-morrow I expect to have dealt with everything that is still in arrears ; then I shall leave off scribbling and go to London, but will telegraph beforehand if letters are to be addressed to Longsdon. Meantime my lengthy letter will have arrived, with which I bring to an end all the scribbling I have hitherto been doing. Everything must be settled without me. What the departments propose must only come to me after it has been tried. In essence, I should like to have to do only things which cannot be done without me, which require my special decision or in which my longer experience is of value. This is the case, e.g., with the Petersburg questions, and just now with Berlin, for big and important decisions in unusual cases.—

In my letter about Regulations for the Works I have not been able to refrain from holding up a mirror. Anyone who thinks himself aimed at may ponder the matter.—I will send you later my original draft (in pencil) which Fritz copied. Fritz has now bought himself a book, in which I shall write various things for him ; he will also copy this long letter into it, and please send him what I wrote about the control of the shop-managers and foremen, or a copy, so that he may include it in his collection. I am glad that he is doing this work at his own desire, and taking great interest and pleasure in it, constantly volunteering to help me ; he already takes his future task seriously. That is a joy and a comfort to me.

I leave it to the discretion of Richard and Diechmann to let my letter about Regulations be read,[2] and generally to make no secret of it ; but only the worthiest must see it—that includes Richter, Hagemann, and Maassen. Those who want order will agree in what I have said, those who want none are not taken into consideration or regarded.—I enclose one more note for Herr Loerbroks, who will understand its purpose ; a point should be made of bringing pressure to bear on the town and on the gentlemen who own Schwanenkamp, to induce them to agree to the sale of Segeroth, where the cholera houses are. After this I shall again take to writing mainly in pencil, as writing in ink has a very much worse effect on my nerves.

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[1] The eldest brother of Frau Krupp ; he had recently, at Krupp's desire, joined the Firm as a member of the Prokura.

[2] Krupp's detailed letter from Torquay, dealing with the new Works Regulations which he desired, is considered fully in my *Biography of Alfred Krupp*. (Berlin : Reimar Hobbing.) Its length forbids its reproduction here.

Torquay, 26.12.1871.

KRUPP *to the* PROKURA.

. . . I have another proposition.[1] With this money let us first establish 3 class-rooms for Catholic schools (outside, on Suer's land if possible. Herr Rasch will report further on this), and also 3 class-rooms for Protestant schools, the latter on the high ground inside the estate, and at the same time make sure of space to be reserved in the same neighbourhood for more than twice this number of schools and for playground. In 5 years' time there will be more than 1,500 children of school age there, and then you will find the 12 schoolrooms by no means enough. The schools and the ground are to remain our property, and we shall at once come to an understanding with the Government, and if not, whether sooner or later, then let the Government build the schools elsewhere, and we will use the buildings for any of a number of purposes, as we may choose. Moreover, I am not at all disinclined to pay the salaries of the teachers, so that instruction can be given to the children free, or perhaps at a reduction of half the school fees. That will be a great attraction, and will bear fruit ; the better men have of course the first claim to live there, and of these, those who have the most children. (An encouragement to the parents to provide plenty of faithful subjects for the State and workmen of their own race for the Works.—) I assume that the school buildings will be constructed *with the greatest simplicity*, with light and air, and no luxuries. Everything that can be saved provides means towards another new building. . . .

. . . Herr Rasch[2] will further report on a tailoring institute, which we have looked at together. We must introduce the scheme. Longsdon will get for us such of the suitable machines as can be best supplied from England ; others will perhaps come from Paris or America. This economy in material and work is admirable. All sewing products can be made so very cheaply, and if we get good stuff from good sources our people will have a strong Sunday suit much cheaper than they now get a rotten one from a Jew. We can first send our tailor to England to see the scheme in operation; perhaps they will let him have some practice there, and they will probably give us someone from there. Longsdon will be glad to arrange all that. . . .

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[1] In lieu of a building of which Krupp disapproved.

[2] Krupp had fetched his architect, Rasch, to England, to join him in a trip to London to gather information.

. . . Nobody need be dismayed or confused by all these proposals ; it would be an impossibility for everything to be done with our present resources ; this, however, shews us the only solution. Assistance must be got, and no limit can be set to the amount *other* than that of complete and useful employment and complete control. Success is merely a matter of will. If a State can incorporate a number of States in a year and rule them, then we also can surely introduce a dozen new industrial organizations and administer them safely. If, however, we were bound to do everything ourselves, it would be an unfair demand. What I require is that the Heads shall have *less* of their *own* work, but that they shall bring in a number of well-qualified assistants and make them do the work, confining *themselves* principally to the exercise of vigilance, so that they may all attain a ripe old age.

During his winter in Torquay, Krupp's thoughts and activities revolved almost exclusively about two points : the introduction of the new field-gun, and the organization of the Works, where the technical departments had grown too strong for a weak Prokura. The hoped-for holiday became a record period of work. There was lengthy correspondence with General Voigts-Rhetz, a convinced partisan of his genius, who had to represent Krupp's case before the military authorities in Berlin, before the War Minister, before Bismarck and the Emperor. In the Firm, the new Chairman of the Prokura, Krupp's brother-in-law Eichhoff, was to carry his wishes into action ; the fact that Eichhoff proved too weak to overcome the resistance within the Prokura against the will of the master, goaded Krupp to constantly repeated and often naïve fits of anger and impatience. With the firm resolve to take action at last in person, and to force his will on both Essen and Berlin, he returned to The Hill in April.

Torquay, 6.1.1872.

KRUPP *to* GENERAL VON VOIGTS-RHETZ.

To return to your memorial[1] . . . The late von Doppelmair[2] had heard, from some officious and unauthorized person, about the new gun, which I wanted to keep for Prussia exclusively, or at any rate in the first place. Suddenly General Mayevski appeared with an order for trial guns of the same efficiency, that is to say, with 1,700 feet muzzle-velocity. The consequence was that, after first bringing the matter before the King, who did not wish to see my interests and the relations with Russia restricted and injured, I agreed so far as to undertake the construction for Russia of a batch of trial guns to a specification for calibre and design, which makes them as destructive in effect but much heavier in type, and therefore less advantageous where rapid movement is essential. These guns have been finished since the middle of last year, but we have sought and found pretexts for delaying despatch. . . . Now, however, they will soon be pressing us, and they no doubt have spies in Berlin who report what comes to light there. This is only one more reason why I so urgently desire to be able to put in hand for Prussia without loss of time a thousand of these guns at least, if not two, together with the mountings. By the end of this year we could have this thousand finished complete, and in the course of next year the second thousand, which we shall need as well, for you will be convinced that none of the old style of field-guns can remain. . . . We ought, nevertheless, not to delude ourselves into the belief that this achievement is bound to be of eternal duration, and so fold our hands in our lap. The same admirable energy that was shewn so universally and so unflaggingly in the war is still needed in this direction, and is the first and surest protection against another long and disastrous war. You will be convinced that on the whole the effect of the new artillery will be double that of the present. If only the influential chiefs would soon convince themselves of this, and an accurate report be made to the Kaiser, then success would be assured. . . .

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[1] Marginal remark for the Prokura: "Gen. V.-R. had said, in his memorial to the King, that the Russians had already ordered 500 guns with 1,700 feet muzzle-velocity."

[2] The military attaché of the Russian Embassy in Berlin.

I am very pleased to see that the Navy comes under the Imperial Chancellery, and has its own Minister.[1] I am interested incidentally to know whether we shall build many ships. I am obsessed with the idea of building iron ships in future for our own traffic, and of starting a dockyard on the Rhine or in Holland, perhaps also somewhere on our coast. Moreover, I shall be in a position to manufacture the best plates for armoured and other ships. It will depend on whether the amount of the German demand for such material is big enough to keep the new Works employed. That would of course be the condition of their erection. I hope Prussia will have good naval architects. I am glad to see that the naval architect Reed[2] has not been engaged, as he is not sound. Our naval designers are not yet independent, and readily adopt England's and France's crops, including the weeds. It is a good thing that we beat the Englishmen a couple of years ago, otherwise we should now have English muzzle-loaders. The Ordnance Department of our Navy is very good ; it has adopted the best of what is new for a couple of years past, while the General Department remains as hidebound as ever and goes on botching things. Everything would now be well set going if we had the field-gun. Our salvation depends on that, and, as I have already told you, the future of my Works as a private establishment. I wrote you recently about the scale on which we are proceeding, and you can judge from that how hopeful the future appears to me. Meanwhile, on the other hand, I have no intention of being irresponsible, and fate is welcome to fulfil itself ; I am ready for anything.

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[1] General von Stosch.

[2] Apparently Sir Edward Reed, who had been Chief Constructor of the Navy at the British Admiralty from 1863 to 1870.—Translator.

Torquay, 14.1.1872.

KRUPP *to the* PROKURA.[1]

This little house—now in the middle of the Works—into which we moved in the year 1822–23, after my father had unsuccessfully sacrificed to the invention of the crucible-steel process a respectable fortune and all his vitality and health in addition, this which was then the sole dwelling-house of the family, in which I spent with them a number of years of hardship and sorrow, from which my dead father was carried from the room A to the grave on 28th October 1826,[2] in which, in the attic X, I passed hundreds of sleepless nights of care and feverish anxiety with little prospect for the future, where before and after some small successes the first hope awoke, and in which I experienced the fulfilment of my boldest hopes—this little house must, as soon as the season permits the work, be raised as much as necessary, provided with new sills and doorposts in place of any which may have rotted, and restored to the exact state in which it was originally. Room A must have only one window as formerly, and all the window-shutters a ventilation-hole like this ♡. In case of walls being removed, and doors and so forth shifted, I want a rough sketch as soon as possible, in order to shew everything exactly as it was.

The little house is to have no business purpose at all. I wish it to be maintained as long as the Works exist, and that my successors, like myself, may look with thankfulness and joy at this monument, this source of the great Works. May the house and its history give courage to the fainthearted and imbue him with perseverance, may it be a warning not to despise the humblest thing, and to beware of arrogance.

When in the Works, I wish usually to stop there and rest, and, unless the building should be devoted to some other purpose than the present one, ultimately to be buried from that same house.

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[1] Accompanying a sketch of the so-called "Stammhaus," in which Alfred Krupp's father died.

[2] It was on 11th October.

Berlin, 28.1.1872.

General von Voigts-Rhetz *to* Alfred Krupp.

Permit me before anything else to express my heartiest and most fervent thanks for the kind and friendly wishes with which you made me so pleased and happy at the turn of the year ; in particular, however, for the true and changeless friendship which you always shew me so warmly and cordially, and of which I am rightly proud. . . .

. . . A trial of the gun has recently been made on a considerable scale, with the *most brilliant* results, as on all previous occasions, and this has led to the intelligent majority of the Testing Committee all declaring themselves in favour of your gun as the *sole gun* for the artillery, while only a small minority of the members expressed reservations. Major von Neumann, the top-sawyer of the whole Committee, was on that occasion asked his opinion by Colonel Willerding. He, with another officer from the Gunnery School, had been invited to attend the trial, and he gave a splendid lecture on it, bringing out so strongly and convincingly the gun's high degree of perfection, that the majority of the Committee, as I have said above, immediately declared for the gun, and Colonel Willerding could not help asking Major Neumann to assist in drawing up the report, to which he at once agreed, promising to render it in a couple of days. So all is well in this respect, as the essentials are in the hands of a very intelligent and energetic officer, who will expedite matters.

My informant shares my view that the Kaiser himself must be induced to command a trial of a number of guns in his presence. . . . If you would be good enough to tell the Works to let me know provisionally what time is needed to complete 6 guns, it would be possible to notify the Kaiser that this time plus 4 weeks is the date for which he could command such a trial and be present at it himself. This seems to me the best way to attain quick results. Meanwhile, I will speak again with the Crown Prince, and especially with Bismarck, so that he may take up the matter and promote it from his standpoint as a politician and statesman. . . .

Torquay, 31.1.1872.

KRUPP *to* ERNST EICHHOFF.

From what I wrote yesterday to Loerbroks, asking whether the firm's contracts will be affected if I sell out, and from what I wrote to Meyer, you will see what ideas I have in my head. If it comes to the worst, I will settle up with all loyal employees to their satisfaction ; no one shall lose if I retire. If, however, I carry out my old plan of keeping the Works in the family for ever—and this remains my predominant desire—then everyone will from now on be placed and displaced, esteemed or set aside, in accordance with his capacity and his value. I intend to see order introduced at last. and there is no question at all of patience, more patience. For years I have been patient in vain ; now I cannot be patient for as much as another fortnight. I am quite without any assurance that what I have laid down will be carried out. It is Herr L.'s business to draft the rules, and in general to make all regulations of the kind, or at any rate to edit them ; that is implicitly his business as the lawyer, and only his, and there is no need to discuss that point. No regulation or order of any sort must be made in the name of the firm without approval and editing by the lawyer. Please adhere to this in all cases. Moreover, I think that, in view of your position, representing my views and familiar with them, you should have less hesitation in putting that into words, or in laying before your colleagues what I write to you. What I write to one holds also for another ; I do not want to have any secrets. Do not worry about the harmony which you are afraid of disturbing by indicating my demands. For it is not by silence and inaction that we shall gain our ends, but only by a vigorous and stubborn fight against everyone who is insubordinate, and the sooner they are challenged the sooner they are overcome. . . . I do not want to repeat any part of the programme, lest I wander from the point. It contains all the principles for observance, including those in regard to the majority of the persons examining and deciding a question which has to come before the Procura. Up to the present none of this has been observed. That must not wait for the Regulations.—In my yesterday's letter, I have, moreover, already mentioned strikes in all spheres. Whenever a strike shews an inclination to break out in any managerial clique, I shall come there at once, and then we will see about settling the lot. I shall act quite ruthlessly, as there is, I see, nothing else for it.

I demand that the Regulations shall be drawn up by the Procura without delay and without shewing any weakness. Let Herr L. get for himself any assistance he needs. If the Procura fails to do it, I shall have it done by someone else in accordance with my programme and all the pertinent papers. I shall wait no longer. What does not bend can break. . . .

Torquay, 22.2.1872.

Krupp *to the* Prokura.

To Messrs. the General Plenipotentiaries !

After closing the whole of the correspondence about the questions of the moment, I have had from Gen. v. V.-R. the letter which I herewith send you in confidence, to strengthen you in your confidence.[1]—

I hope and trust that the Works will do their duty, so that we shall deliver the test pieces long before the time mentioned.—

Now we have the great arbiter of Germany's destiny pulling with us, and now what I promised you I would manage to get in spite of all opposition will soon come true.

Only forge ahead with me courageously and energetically ; then we shall attain all our ends—and only then. Without prompt and determined consideration and action, there can be no success ; I can quote both gratifying and regrettable instances from our experience in both directions.

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[1] Von Voigts-Rhetz wrote, *inter alia :*

" Many thanks for your welcome letters of 4th and 9th, which I am only now answering, as I wanted to tell you about a further step forwards, which I can only announce to-day, seeing that Bismarck, too, has now harnessed himself to your triumphal chariot with all his energy. Acting on your opinion —which was also my own—I have had a thorough discussion with Bismarck of the question of our artillery ; this took place the night before last, and went on until 12 o'clock. He also complained of the wretched state of things at the War Office, in discussing which I was not mealy-mouthed. He too starts from the principle that he cannot proceed further with his policy without an effective re-armament. He has already repeatedly spoken personally to the King about it, but has always been put off with assurances from Herr von Roon that we are splendidly armed, although he knew better. My verbal information has now put him completely *au fait*, and he promises his energetic co-operation.''

Communicate confidentially to the gentlemen of the gun department the essential passages of V.-R.'s letter—that will encourage and please them.—

Torquay, 2.3.1872.

KRUPP *to* GENERAL V. VOIGTS-RHETZ.

I may have to be brief, and must hurry to catch the post, but I want to-day to reply to your welcome letter of 27th ulto, and to mention what may still be of use at the moment in view of the steps you are taking and the interviews you are having.—

I can see the difficulties growing every day, and am only waiting to hear what you will have to tell me about the success which you and Prince Bismarck may have had with the Kaiser. I shall come there immediately, if our opponents should succeed in raising fresh obstacles to progress. I should have to strain every nerve against it, and shall unfailingly do so, if the Royal Testing Committee, in order to emphasize its own importance and to accept nothing which has been tried out before being submitted, should endeavour to waste time on studies which are all superfluous, since my Essen Testing Committee has been through them all and can answer on the spot any question which is still a mystery to those gentlemen and on which they would like to sacrifice another year.—You can rely upon it, and assure the Kaiser, that there is nothing which has not been considered, and if there is still something remaining to be perfected, my people will unfailingly complete it in their ordinary quiet routine, without any disturbing interference from any other direction.—

Any greater calibre would be too heavy for mobility ; the present gun is already of a weight which should if possible not be exceeded, and should only be increased if necessary for the reduction of the recoil. So the calibre cannot be greater. (A subsidiary question is whether 6-pounders will be introduced in addition, and the necessary specimens will be got ready for later trials.)—The muzzle-velocity of 1,700′ must be retained, and if it were possible to gain another 50′ without undue strain on the metal or excessive recoil, this possibility would have to be utilized, but not 25′, let alone 200′, of what has been achieved should be given up. Such a suggestion (as the proposition to go back to 1,500′ in order to reduce recoil or strain) is only intelligible from a gunner if his service has been in the kitchen or the stables, and he merely wears a gunner's uniform. For a gun of 1,500′ muzzle-velocity I should not have needed to spend so much trouble and money ; we could have shaken it out of our sleeves.. The new gun, on the other hand, will not be so quickly imitated by anyone, and there is no doubt that the advantages of the greater muzzle-velocity will be properly appreciated when a few of the authorities have published the results of their tests. Those whose business it is will themselves arrive at the different values of the different types from their effects at the different muzzle-velocities, and they will not be satisfied with less than the maximum efficiency. . . .

I must close for to-day, as I am ever so tired. Since I have been here, I have occupied myself with nothing except arranging about my house in Essen—the future of the establishment—organization and so on—I have done more work here than for ten years past ; I have been compelled to do so, giving up my holiday entirely. . . .

Torquay, 7.3.1872.

KRUPP *to* ERNST EICHHOFF.

I have sent you a telegram, of which a copy is enclosed, in reply to your letter of 5th. Why should I not know what is brewing and who is brewing it ?[1] Who is in opposition and who is in revolt, and why ?—The truth is nothing like as bad as the apprehensions one can entertain. I shall not write any more, and if all that I have already written has not sufficed,

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[1] There were disputes as to range of authority within the firm, and the ageing Eichhoff was not dealing with them with the needful firmness.

I can only settle matters by coming in person, and to that I have quite made up my mind. There is nothing to be hoped for from time ; I will have no further delay, and, little as I feel in a fit state for a journey, I shall make it even if it were my last. I shall tell everyone to their face the same as I have written, and I shall send anyone to the devil who thinks he can break his contract over phrases.—

My very best wishes to yourself ; please do not keep unpleasant things from me, as that defeats its object.

The cannon king returned home from England in the spring of 1872, exhausted rather than rested, and was met by the seething activity of the era of the bubble companies. The crucible-steel Works, free from the feverish hunt for profits—" we have no shareholders waiting for their dividends," as Krupp said—had a sufficiency of other driving forces to take them at full speed into the welter of the rising markets. The new field-gun, held back for years by official shortsightedness, if nothing worse, was now to be conjured into immediate existence at the will of the Kaiser. Krupp promised it, and then, to keep his word, had to take the risk involved in large workshop extensions and fresh hordes of workmen, so that the profits melted away in new plant. Then came the period of competition for coal and ore, and Krupp dared not be behind unless he wanted to give up his traditional position of pre-eminence. He himself, always obsessed by the idea of providing for a century ahead, pressed for huge acquisitions, without troubling to pay equal attention to a sound financial basis, and thus there came into the economy of the Works a streak of brilliant temerity, which might be dangerous in a falling market. In spite, however, of his sixty years, Krupp retained unshaken confidence and energy in pursuit of the most ambitious objectives, dragging his colleagues after him. The social danger was appearing clearly on the horizon, and he was the first to undermine the foundations of discontent by gigantic welfare schemes, housing settlements, co-operative stores, eating-houses, and hostels, although it cost him millions of marks of which he saw no prospect of reimbursement.

Undated (June, 1872.)

KRUPP *to the* PROKURA.

The prices of ships in England are absolutely enormous, and the plates are bad. I simply cannot get rid of the idea that, to begin with, we ought to get hold of a first-rate expert (or two or even three), if possible a German who has had thorough experience in England, in order to go into the question whether he or they together are in a position to build first-class ships to first-class designs for us, either in England, Holland, or Prussia.[1]

Capable practical experts will find capable assistants and train others. Even if we gain nothing by it, even if the costs of manufacture should be higher, it would be a fine thing to introduce the industry into the country, and thus make ourselves independent of England in this as well. Think of the future : what will come of it in 10 years ?—Whether steamships alone have to be built, or a number of sailing vessels for the sea and the Rhine, does not affect the question whether we ourselves are to build. I am in favour of it, but, like every other new enterprise, this requires skilled assistance—which we shall find if we discuss together the steps to be taken.

Essen, 24.6.1872.

KRUPP "TO THE MEN OF THE
CRUCIBLE-STEEL WORKS."

Forty-five years ago I stood with a few workmen among the original fragments of these Works, inherited from my father. The day-pay for smiths and melters was then raised from 18 stivers to 7½ silver groschen[2]; the full week's wages amounted to 1 thaler 15 s.gr. For fifteen years I earned just enough to be able to pay the men their wages ; for my own work and cares I had nothing more than the consciousness of duty fulfilled. As general conditions changed and the

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[1] This refers to the Krupp fleet, which was to bring ore to Rotterdam from the newly acquired Orconera mines in Spain.

[2] 9*d*.

Works began to flourish, I gradually raised the wages, making a rule of always doing this voluntarily, not waiting to be prompted, and this rule shall still remain in force. One useful scheme after another has been started, and many are still pending ; to this day every effort has been exerted in the interests of the men, and the new dwellings which have been begun total thousands. When business depression crushed all industry, when orders were lacking, I nevertheless had work continued, and never dismissed a loyal man. There are still many old men in the Works who can testify to this. Ask them what was done for the men in 1848. Besides, all know the later sacrifices made in the war years. Who will calculate what is being lost in the present scarcity of coal ?

Mutual loyalty has made the greatness of the Works. I know that I deserve your confidence and possess it, and that is why I want to address these remarks to you. Before I have cause to complain of disloyalty and opposition, I warn you of the fate which wandering agitators and their periodicals are striving, under a pretence of benevolence, misusing religious and moral maxims, to bring upon the great working-class. Their harvest will begin when they have irrevocably undermined the existence of your class with false allurements; they seek the general ruin, in order then to use their influence to fish in troubled waters.

Enquire about the past of these apostles, about their domestic and moral careers. They find the money paid by the workers for spoken and written scandal is a more convenient and pleasant booty than hard work offers them. The *Essener Blätter*, amongst others, is trying by every kind of invention to bring into suspicion the character of the management of my Works, and stated yesterday, for purposes of agitation, that the conference had been forced to grant a considerable increase of wages to one class of furnace worker. To this and similar barefaced lies from malicious enemies I now reply with the following solemn warning. Nothing, and no consequences to follow, will induce me to allow anything to be bullied out of me. The management will continue, with the goodwill which has hitherto been its law, to carry on the Works in the spirit of my policy, and on my account, so long as I still regard the men as members of the establishment by reason of their proved loyalty. I can, of course, make over my position any day to others, and, beyond any question, no company of capitalists would be likely to surpass me in goodwill and self-sacrifice. Nobody can well suppose that it is from greed of gain that I subject myself to the pains and labour which are inseparable from the conduct of such a business on my own account. Everyone knows how I have at all times valued the worker and his work, but let everyone rest assured that misconstruction of my motive would be capable of destroying my rooted predilection for them. Let everyone realize that I do not change my mind ; that, as always, I promise nothing that I do not perform. I therefore warn you once more against the allurements of a conspiracy against peace and quiet. In all my enterprises, a good and steady workman is afforded the opportunity, after a moderate term of work, to enjoy his pension in his own house—and that on a more favourable scale than anywhere else in the world. I expect and require full confidence ; I refuse to comply with any unjustified demands, but shall, as hitherto, anticipate every just claim ; I therefore invite all those who will not be content with this to give notice, the sooner the better, in order to anticipate the notice which I shall give, and thus to leave the establishment in a legal manner, and to make room for others, with the assurance that I intend to be and to remain master in my own house, as well as on my own ground.

Ems, 17.7.1872.

KRUPP *to* KAISER WILHELM I.

Your Majesty,

I have the honour most obediently to beg the favour of an audience.

At the same time I take the liberty of forwarding herewith a copy of correspondence relating to the new field-gun, with the most important points marked for ease of reference, and the present position indicated in short marginal notes. In addition, I have the honour to enclose my programme of what I wish to advance at the audience.

I beg Your Majesty most graciously to deign to accept the further enclosure of an album containing photographs of the new 8 cm. field-gun. It includes a picture of the more recent extensions of my establishment.

I remain, with the deepest respect,
Your Majesty's most obedient servant. . . .

Programme for the audience.

1. Proof of the necessity for a Cabinet order for a prompt final trial of the completed specimen of the 8 cm. (4-pounder) field-gun, designed by the Krupp Works 4 years ago, and since then thoroughly tested : this trial to be against the existing Prussian field-gun, against 4 and 6-pounders, without allowing the interpolation of other projects of the Artillery Testing Committee which merely serve to prevent getting results. Necessity that such a trial should be completely independent of any influence of the Committee.
2. A secret communication, an interest of State *vis-à-vis* foreign countries.
3. A private affair, a desire.[1]

The Hill, 10.1.1873.

KRUPP *to* WIEGAND.

I want to have a complete account kept, in which the whole cost of Bredeney is shown, from the first purchase of land onwards, just as you already have it in the books for all the temporary buildings which we first used (up to now). From the time I started the new buildings, beginning with Barchewitz's salary, I want all the expenses for the different purposes kept separate ; I do not mind how long it takes or what it costs, but I want it complete ; it must be possible at any time to find from it the particular thing required, e.g., cost, time, name, article supplied, the construction, the firm's insurance and management expenses, temporary buildings, all officials and inspectors, what they received, what bricks, wood, iron, stone, &c., were supplied, the cost of all freights, including tolls—and this should be continued until everything is finished.

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[1] The " desire " was Krupp's proposal that a large State loan should be granted, possibly secured by a mortgage, to lighten the financial pressure on the firm as a result of the rapid extensions, the housing settlements and purchases of collieries, mines, &c. As in previous similar cases, however, nothing was granted beyond advances on orders placed or in prospect.

Bredeney, 16.1.1873.

KRUPP *to the* PROKURA.

Please do not take it amiss when I say that I am unable to agree that we should look for foremen and assistants in any technical capacity from other Works in other parts.—With our great business, with such practical experience, everyone must conclude that the establishment is a more than sufficient school for new helpers. From other Works we should possibly get pretentious persons, and it is unlikely that we should get reliable ones. In our own circle we can count better on loyalty and constancy. All our principal men, with scarcely an exception, came here with only a university education, or less, and have yet become the men they are.

For a foreman, a higher elementary education is sufficient ; most of the foremen, including the best ones, have hardly had as much.—For a shop-manager I usually prefer one who began in a practical capacity. He is not so afraid of fatigue, sweat, and dirt.—We know of brilliant exceptions, but I am speaking of the general rule. In short, to look elsewhere for foremen for the Works must appear to others an evidence of poverty. I cannot urge with sufficient emphasis that we should in future arrange to train all our helpers ourselves, in the Works. Only selfishness can be a hindrance to this.

The Hill, 3.2.1873.

KRUPP *to the* PROKURA.

Some months ago I stated that on the 24th February of this year, after 25 years of sole ownership of the Works, I wanted to celebrate the event by laying the foundation-stone of a new hospital to be built of stone. This is to confirm that decision as regards the building ; it is, however, doubtful whether the plans will be ready by then, and the laying of the foundation-stone will not take place on that date, but later, and *without any ceremony*, as has been the custom with us all along. Now, however, I hear, to my horror, that there is talk of all sorts of festive projects, congratulations, deputations, presents, a torchlight procession, and the like, and I ask myself whether, after all, nobody knows me. . . . I beg—and I am sorry that I have to say this, and that even now I am so little known—I beg that you will prevent anyone whatever coming here for such a purpose, or making me a present, or anything else. I shall accept nothing, nothing but what every true friend is glad to give me and can give, a good wish in silence, and of that I feel assured beforehand. It is needful to let this be known to those who might perhaps involve themselves in unnecessary expense and inconvenience. From to-day onwards, everyone should be prepared for my going away at any moment, and I shall in no case be here towards the end of the month (the date in question) ; nor do I want to read any letters, because I cannot answer them, and I refuse them, equally with presents, so that those, too, who cannot write and cannot give (and yet would like to, if they thought it in place), may not feel in an inferior position.

I hope that I shall not need to waste another word on this.

Early February, 1873.

In order that I may live in peace, and not be tortured with ceremonies and importunities, some counter-measure is necessary in advance. Letters and visits have already begun to-day. I shall accept nothing of the kind, and that must be known, since otherwise it would be *rude* of me. I am not now in a fit condition, I am not well enough, to bear the slightest thing that does not form part of the daily routine. People still do not seem to know this, and there is a danger. I therefore wish everything, without exception, to be kept away from me, and that everyone may regard me in these days as on the other side of the Alps. I charge you to post up the enclosed notice at the Works for Sunday, *or better, early to-morrow* send a copy as well as an advertisement to Baedeker, so that by to-morrow my intention may be known in other quarters.

Just now actually the mayor of K. and his wife were here—but the one that was *not here was myself*. That sticks i' t' gizzard.

Manifesto for the 25th Anniversary of Alfred Krupp's ownership.[1]

Fifty years ago this dwelling, originally a workman's, was the refuge of my parents. May every one of our workmen escape the load of care which the foundation of these Works brought upon us. For 25 years doubt remained of the success which has since then gradually, and ultimately in such a marvellous degree, rewarded the privations, the exertions, the confidence, and the perseverance of the past.

May this example encourage others in affliction, may it increase respect for humble homes and sympathy for the great troubles which are often found in them.

> " The object of work shall be the general weal ;
> then work brings blessing, then is work prayer."

May each one of our community, from highest to lowest, strive with equal conviction, thankfully and modestly, to establish and confirm his domestic happiness ; then is my greatest wish fulfilled.

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[1] Accompanying the manifesto was a picture of the " Stammhaus."

ALFRED KRUPP.

Essen, February, 1873.
25 years after my assumption of ownership.

Naples, 15.4.1873.

KRUPP *to the* PROKURA.

. . . I hope it is not too late for the following remarks. If we exhibit the Russian 4-pounder,[1] which so far has only been offered to Austria, we bring the design and the projectile itself to public knowledge, without getting any benefit from the fact, and with no other consequences than that the French immediately become acquainted with it and imitate the gun itself. We cannot, of course, prevent Russia from making the gun known, and perhaps she will even exhibit it in Vienna, but in that case it cannot be said of us in Berlin that our efforts to keep it secret from other States are all humbug, and this thought strikes me—unfortunately not until so late—it troubles me, and I shall probably telegraph directly that the 4-pounder and its ammunition are not to be seen by anyone, that they are to be left there without being unpacked, or at most placed at the disposal of the Austrian Ministry, under the condition that information on the subject is not to be imparted to any other State.—

Seebold[2] must not admit the existence of the new field-gun to anyone. I am counting on this still coming to his knowledge soon enough, and infinitely regret that I myself, without thinking more carefully about it, agreed to send this 4-pounder to Vienna. If we feel inclined to offer such guns to one State or another, they should be invited to Essen ; I think, however, that for the moment we must on no account offer field-guns for sale at all, because we must remain free for Prussia. Enough, then ; apart from the Austrian Artillery Department, no one in Vienna must know anything of this gun, and if it cannot very well be safely given to the Austrian authorities for further test (under a pledge of secrecy), let it remain without unpacking, or let it rust away with the ammunition (the projectiles) in a damp corner, rather than give information to the French, English, and Americans, who will only pick up ideas from us, will never place orders, and the first of whom shall never at any price get anything from us. Seebold should conduct himself accordingly, and with Frenchmen especially have nothing more to do than ordinary politeness requires. Let Herr Seebold say to them in particular, if there should be any talk of trial orders, which they have always attempted to use as a bait, that the Works are fully engaged for years to come, and cannot accept any orders. He should say simply that they are engaged on Prussian work alone, and that no one should imagine we are exhibiting to obtain orders, but only from the single higher consideration of demonstrating Prussia's position to the world—what she has achieved for peace and war. Seebold must, moreover, let nobody approach the guns unless he knows him and has invited him. . . .

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[1] The gun was intended for the International Exhibition in Vienna, and had been sent there.

[2] Krupp's representative at the Vienna Exhibition.

The Hill, 22.6.1873.

Krupp *to the* Prokura.

In the Works the older men should live together in unity, consequently the young people must accustom themselves beforehand to fellowship, and no boundaries must be drawn between them. From childhood onwards they must walk in peace and friendship together.

Consequently we can only do with undenominational schools. Let those who will not attend them stay outside ; let those who bring up their children in the principles of inter-denominational discord leave the Works ; on the other hand, I agree that, for those who attend the undenominational schools, education shall cost less or nothing at all. I insist that not a single divided school shall remain, and if it does I shall use every endeavour, and in case of need shall myself take steps, for the reversal of what has been done. I approve no further step in that direction, and must therefore insist that a halt shall be called at once in what has already been started for the purpose, even if it involves declarations to the sheriff and the Government.

P.S. I do not mean to assert that I originally expressed myself to this effect ; since, however, I have considered the question more closely, I have arrived at the above conclusion.

Subsidiary remark :

We should be taking a hand in separating people, and the consequence would be Catholic and Protestant districts in our settlements, enemy quarters opposite one another, quarrels and fights between the school children, despotism of the priest in the Catholic quarters, ultimate necessity of entirely removing one creed, and allowing only one to exist. They must all live mixed together.

The Hill, 26.7.73.

KRUPP *to the* PROKURA.

So Turkey's order is now a *fait accompli.*[1]—Now I strongly urge that everything shall be done to prevent Prussia's or Germany's requirements being delayed in the least degree by any other commitment whatever.—I have assured the Kaiser that the whole equipment of the 2-calibre field-guns could be finished by the end of next year, if it were decided upon to-day. I have also informed him of the Turkish order, in order to assure him that naturally the home requirement (at prices averaging ten per cent. less than those normal for foreign countries) would be covered by the Works in the first instance, and I take occasion now urgently to recommend that still more tools should be ordered, if that should enable us to be easier in our minds. I believe that, with trade as it is at present, very good tools can be bought in Austria, and not too dear, because business there is at a standstill ; moreover, the Vienna Exhibition will perhaps offer an opportunity of acquiring a selection of excellent machines in the autumn.—

It is 4 years now since we arranged to reserve the best ores

[1] The valuable order from Turkey, which had been under negotiation for years. Even so it was given before the order for the German field-guns, which was still held back by the Ministry of War.

and their product for the constantly expected early settlement of the question of the new field-gun. Considering this, and the fact, as I see it, that, next to the excellence of the army, our whole salvation will depend on complete and timely equipment with the new gun, which is superior to all others, I hereby decide that, without waiting for the order,[1] the whole of the balance of the required quantity of the best steel castings shall be prepared, and that the processes of forging, boring, and completing shall be carried out in batches—say, with 500 each time. Begin with the calibre at present approved.

During the forging and boring, there will still remain an opportunity to make any modifications that may be prescribed. The decision must soon be arrived at, and it will also, let us hope, include at once the whole quantity which can be of service, since in that case timely measures can be taken with so much more certainty.—*Do not be deterred by doubts. I take the whole responsibility.* This is a case in which we are not thinking at all about whether we can do a good stroke of business, but must risk even substantial loss with equanimity. I shall not be easy in my mind regarding the continuation of my ownership of the establishment in the future, until Prussia and Germany are able to confront an enemy with the new field-gun. I look upon this as a question of the very existence of both the State and the establishment; the latter I regard as a national workshop, and I think that I have always shewn this by my manner of conducting it. Herr Meyer should therefore express himself to the authorities in Berlin in the same way as I have and in accordance with what has here been said.—I am convinced that our action will meet with recognition in the end. . . .

I have taken all this upon myself, and have constantly re-sown all the fruits of the past up to the present day in the extension of this establishment, for whose continuing prosperity and advantageous working in a manner calculated to assure its maintenance the large acquisitions of mines were necessary.

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[1] The German order was not yet given; it was solely the Kaiser's assurance at Krupp's most recent audience at Ems which caused him to mobilize the whole Works on the field-guns.

Not speculation, not gambling, but—with well-weighed neglect of the principles of the commercial contractor, who is mainly concerned to extract the maximum dividend from his capital—the creation of Works which are in a certain degree inseparable from the conception of the growth and importance of the State, and are consequently indispensable, —this object alone has, from my youth onwards, spurred me on to take the measures which, as I acknowledge with satisfaction, have brought me the most splendid fruits, the most valuable relationships and a wide circle of people around me who do not complain of a poor lot in life.—

Conscious of this, I do not range myself in my expectations alongside the class of industrialists who are just smart business men, and, while gratefully acknowledging the very friendly way in which I have hitherto been met, trust that, in view of my exceptional methods as contrasted with those of the shrewd and self-seeking, even the Ministries themselves will be prepared to take the responsibility of exceptional procedure, seeing that my proposal is made in the interests of the country.[1] The earliest confirmation of the order, and a simultaneous agreed advance, will assure the continuous development on a large scale of the establishment and its activity, in spite of all conceivable eventualities other than surprise by war.—

After some years of an unexampled but unsound boom, the International Exhibition in Vienna marked the beginning of a coming economic collapse. Unfulfilled commitments, refusals of credit, bank crashes, and an endless series of bankruptcies shook industrial life throughout Central Europe, and even far beyond. Flourishing concerns fell to pieces, the highly-quoted shares of yesterday were to-day's waste paper. The wild storm in the money market caused the firm of Krupp also to rock on its foundations. Its huge purchases and extensions had not been made without incurring huge floating debts, and these were none too well covered. Krupp's obstinate refusal to have recourse to the public money market, so long as the reputation of the firm was still unshaken, was the cause of unfortunate delays ; his firm reliance on the Kaiser, on the State, on his position as virtually a public institution, proved to be self-deception. Neither Bismarck nor the Kaiser could help. He was granted advances, but no loan ; he was referred to the public money market, and a loan of 30 million marks was only just able to be arranged, on oppressive terms, with a strong group of banks, in time to prevent worse from happening. Never before had Krupp's self-confidence, or his reliance on his principal collaborators, suffered such a heavy blow ; its effects remained with him for years. His mistrust of human weaknesses and faults, always strong, assumed formidable dimensions. Only one thing remained unshaken, his belief in the need for his Works, his certainty that they were and must remain a blessing to the workmen, and his confidence that work alone can bring help and new strength. Supported by this belief, he staggered on with the heavy burden of his position.

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[1] Krupp sent the Kaiser a copy of this letter, the connexion of which with the State loan, which had meantime become an urgent need, is unmistakable.

The Hill, 10.9.1873.

KRUPP *to the* FIRM.

A secondary question.

Coal keeps on getting dearer, and we know that gas melting-houses can be worked on peat by the Siemens process.

Should we not set up a special gas-testing station, where an energetic man, beginning on a small scale, might make studies, aiming at the utilization of the inferior quality peat which is available in such quantities between Dülmen and Holland and Hanover ?

It is a question of *cheapness.*

It was not at my wish that the question of Russian peat was formerly taken up, and it was quite wrongly handled.

Experiments were conducted with that, instead of first using the Hanoverian peat until the question of utility was solved, and keeping the Russian for the final comparison of quality.

At that time a timely answer might have served to determine our action in the matter of taking over the Russian factory.

In any case it is desirable that we should always be the first in all things—not merely imitators.

The Hill, 9.10.1873.

KRUPP *to the* PROKURA.

. . . There must on no account be any question of slowing down work, closing foundries, working at half strength or half time, or only partial employment of the men—for that amounts to mortification, and would be the *beginning of the end* ; I might as well—and better—make up my mind to part at great loss with all the material and the whole process.[1] Before that, however, we must try every alternative, as this industry has already become too deeply rooted for us to be able to abandon it, with all that depends on it, without a serious surgical operation. There are, moreover, the mines and blast-furnaces, some of which we should no longer need.

The Spanish scheme and the sea-going ships would then be a short and expensive dream.

In such circumstances and with this threatening, there is only one thing left for us to do. We must assure ourselves work on rails for a year in advance, and in future never drop to six months without seeing once more that we get that reserve of work guaranteed in advance, and we must not aim at greater profit from high prices, but from mass production, from economy in manufacture, from progress. The consumption is enormous, but the market is unfavourable, and will always be changeable ; hence the above precaution is necessary. A great many little factories are now being established ; we must make sacrifices to outdo these. We must now agree to any price, even if we make less than any of our competitors. I would rather be fully occupied and gain nothing, would rather lose 5 %, than have to bear all the consequences of a stoppage. In the latter case, we should lose in *one* year what took *years* to gain. . . .

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[1] This refers to the Bessemer factory and the manufacture of rails.

Essen, 7.11.1873.

KRUPP *to* MEYER, BERLIN.

I am sending this to you through the Procura in order that nothing may be repeated.

I am returning to my old proposal, *the advance of ten millions.*[1] In my latest letter to the Kaiser, I repeatedly declared that I need the balance of *six* millions, and the reason why. . . . Everyone knows that the motive of my actions is not greed of gain ; I do not, therefore, need to mention the well-known reasons myself. You know the anxiety I have suffered, especially during the last 5 years, about a better armament for Prussia—so that I even offered it in certain circumstances for nothing. To the extent to which the prospect appeared favourable, I have had preliminary work put in hand, and not only on material ; I have built new workshops, with machinery, to the value of many millions, in order to be prepared to produce the greatest possible number of guns in the shortest time. . . .

For such an equipment of the Works, a great increase of men was required. These could, however, only be accommodated in new dwellings, since no place in the world is so over-populated as Essen. Now, with all these preparations, we have been waiting for a long time for the firm orders, which are delayed from week to week, from month to month. We cannot, however, dismiss the men whom we have trained and stationed, we must occupy them, they must earn their pay, and, to the same extent to which the capacity to turn out guns has been increased, the Works must also extend the manufacture of our other products. . . . What use to me is a stock of raw materials worth 15 million thalers,[2] with which all the German requirements could long ago have been met, if it is not utilized ? I cannot feed my men on steel scrap, but need a couple of millions monthly for working expenses. . . .

I regard the matter as business and not as personal ; the State is welcome to consider its interests. I will take no step myself in regard to it, and will not mention it again to the Kaiser, whom I have already told everything at length ; so I shall scarcely come to Berlin until the question is settled ; at the most I may address a last word in writing to the Kaiser, in order, in case of non-success, to communicate to him the decision on which I am already resolved, so that he will not be surprised. I intend to close in quiet a life which has been full of labour and exertion ; I do not mean to burden myself with more care and labour—I mean to be free—but to safeguard everyone's interests. I leave it to the Procura to come to a further understanding with you in the above connexion. This is my last word.—Kindest regards. . . .

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[1] £1,500,000.

[2] £2,250,000.

Berlin, 17.11.1873.

PROFESSOR VON RICHTHOFEN *to*
ALFRED KRUPP.

. . . I must confess to my shame that, in the pressure of my work, I should perhaps have delayed for some further days my long-intended letter to you, if you had not to-day given me a surprise, to my joyous and grateful astonishment, especially as regards the way in which you recall my ephemeral and insignificant presence among your otherwise brilliant guests. The splendid album is a real art gallery, in which the highest point to which our industry has soared is represented. To the double value which it thus possesses is added a third and greatest, that it is a present from yourself, and a memento beyond price for me. I received it just when I was with some friends at the Geographical Society, and great was our admiration as we looked at page after page, and saw the pride of Germany in the most masterly presentations, produced in a manner worthy of the contents. The large album will be an ornament to my modest abode. The small one is no less valuable on that account, since it contains your protrait, beautiful Bredeney, and your handwriting.

The evening of the day on which I left you I spent in the company of geological friends and colleagues, with whom I stayed at Wiesbaden for two days. Then I spent three weeks in England, and have brought back great and splendid recollections from thence, especially of the British Association's visit to Bradford. . . .

I venture to send you a short paper in English on coal in China, which, however, only handles the subject quite generally. I read it at the Bradford meeting. I am now trying to attract some attention to a new trade route to South-West China, which the French are developing while the other nations look on blindfolded. I will send you an introductory document shortly. It deals with the raising of large treasures of copper, tin, and other metals, which are produced extraordinarily cheaply but until now have never been able to find an outlet. After a while I will send you an English article, rather more detailed, on the same subject, and I contemplate then following it up still further. . . .

The Hill, 7.12.1873.

KRUPP *to the* PROKURA.

Reflections on the production of armour-plates on the plan of the so-called " bar-armour."[1]

. . . I now want to suggest that we should find means, in advance, so to cover guns and gunners that, even if giant guns, such as we are now developing and constructing, should ever attack such a position, everything would remain quite entire. The proposed scheme must therefore be worked out to a point at which a 1,000 kg. projectile leaves it undamaged, if a position should be exposed to the possibility of being attacked by such giants. It should therefore be borne in mind that resistance to 10, 11, 12, and 14 inch is required as well as to the above maximum.—The conditions will be altered accordingly. It is possible, in fact probable, that a similar covering of plates would be cheaper than one of rebated bars of the same efficiency—cheapness, however, is not the reason for this proposition, but the production of a resistance greater than that which plates can offer. I leave the design and the troublesome work to the experts, and should like someone to undertake the matter soon. Meanwhile, I will add a few sketches and ideas (good or bad), and then I give the whole thing up, urging a quick decision, as the question is very important. Without doubt the need will soon be felt on many sides, and we shall be offered an opportunity to perform an important service, and at the same time to keep the Works and the hammers fully employed, even if a rolling-mill is also required to complete the shaping. This would again, like the guns, be an article of our own creation, and the orders would certainly go preferentially to us, as a matter of confidence, even if imitation were to set in later. So if, as we hope, the hammers soon stop working on rails, they may be surrounded by welding-furnaces and work up the toughest iron into large pieces of this sort from our best iron ore. The opening of the Spanish mines happens very conveniently for this. . . .

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[1] The idea of putting together an indestructible armour protection of thick, bar-shaped, forged iron ingots had been suggested to General Todleben by Krupp at an earlier date.

The Hill, 25.12.1873.

KRUPP *to the* " OFFICE—GUN DEPARTMENT."

I am returning the two publications,[1] in which I have read and looked at some interesting matter. Of course, I am not studying these things thoroughly ; I leave that to you.—

It interested me to learn that the plan which I had recommended to General Todleben was carried out and tested some 1–2 years later. I will write to him in due course to ask whether he still has my letter and sketches, particularly if it should turn out to be a question of " Who is the father of the child ? "—All that I have read strengthens the views and wishes I have expressed.

Insufficient thickness was employed in England. Economy lies in the maximum, just as for a hammer it lies in the heaviest anvil-block. The mass must be made of such a thickness that it does not bend, and so soft that it does not break.

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[1] The issues contained technical matter on the armour question, which had of late occupied Krupp more than ever.

I am returning the books to the office, and send you the compliments of the season.—

P.S. So it is agreed that whoever has time and a mind to it shall tackle the proposition, beginning on quite a small scale, and with a comparison of bars and plates in a shield. . . .

The Hill, 28.1.1874.

KRUPP *to the* PROKURA.

In my review of the situation I turn next to coal. The statement of our consumption is really terrifying to look at, all the more since, in a firm belief in the continuation of favourable conditions of business and prices, we have contracted for the whole year at such high prices. We thought that we had done a good stroke of business in this ; this time, however, it was a mistake, and no one can be blamed, if, as I assume, the decision regarding such contracts was a result of the consultation of the experts together. Now we have first of all to face the problem of employing this great quantity of coal without loss, with as much profit as possible. This is all the more essential, since our competitors, who did not contract for the year, and who pay the current price, will have a great advantage over us this year. I have no doubt that coal will soon fall 10 %, and, in the course of the year, perhaps 15–20 %. . . . Never has it been so necessary as under present conditions to strive after the maximum advantages in manufacture, to obtain the greatest possible output from the coal and the similarly high wages-bill. . . .

The workman takes a pleasure in consuming plenty of coal and oil, if it does not come out of his pocket ; he has no feeling for loss of this kind, but he has an understanding of it if he profits by it. From the landing-stage onwards, up to the utilization of the washed slack,[1] there is so much opportunity for waste or economy, that hundreds of thousands can be won or lost, according as these interests are watched in a greater or less degree. . . . Since the advantages of melting with gas have been shewn in such a striking fashion, not one piece more of coke should be used for melting where we can use gas in its place. With the exception of the unavoidable cases, such as the large ingots for guns,[1] a crucible should only be melted with coke when the utmost we can produce with the gas melting-furnaces is insufficient. . . . There is none of all the branches of manufacture that pays less well than the crucible steel ; the monthly statements will prove this, and most certainly shew us how much we have lost by melting steel with coke for ordinary purposes. I am reckoning on the arrangements, which may still be lacking in this respect, being made as early as possible, and urge that attention may be paid to what now needs doing as regards structural alterations to the melting-house.

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[1] "Every coking plant is connected with a large refining plant, where the coal is crushed and its impurities are separated by a washing process." (F. C. G. Müller, *Krupp's Steel Works.*)—Translator.

The question is whether we are to carry out a great alteration or a more limited one. . . . I feel confident that we shall achieve all that is possible, that there will be no cessation of the large demand, that everything will throughout be melted with gas, up to the largest ingots, and that there is no longer any question at all of melting a single crucible with coke, so long as the gas melting-house suffices. . . .

Berlin, 30.3.1874.

Krupp *to the* Prokura.

. . . With the exception of the machine shops for guns, where we probably cannot spare anyone and adequately replace them by others, a proportional reduction of wages for all varieties of work will presumably be inevitable. If the men have the wages which they received 5 years ago, they will still be better off than we are. The working-class screw is now bearing its fruits for the whole generation. Others are discharging their men, but we mean to continue keeping them, in full consciousness that we shall not escape injury, yet with confidence that better times will return, and that we shall then have maintained the work and kept the men. When the relation of the prices of our products to the wages permits of the latter being again raised, we shall not wait to be prompted. The workman asks for a rise of his own accord when the demand increases ; he must get accustomed here, as in England, to his efforts being rewarded according to their value, highly when a large profit is made, and on a low level when it is low, and the workman must make up his mind to limit his needs cheerfully and willingly instead of being compelled to do so by losing his job, and changing places with one who is willing.

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[1] Because there was not yet enough of the gas plant for this purpose.

The Hill, 29.5.1874.

Alfred Krupp *to* Friedrich Alfred Krupp.[1]

It has become usual for my instructions to be carried out perfunctorily, or often not at all, and often to be passed over in silence, particularly when people have no love for the ideas because they are not their own. I shall not forget any case of this kind, and shall not on that account give up anything which I have once recommended for test and introduction, whether it is a matter of manufacture, management, order, design, experimental measures, or what not. I have no intention of repeating anything. It is, however, necessary that all that I have suggested shall sooner or later be compared with what has been done, and I therefore recommend you to collect and record all original letters from me. And in particular I draw your attention to the *armour shields.*[2] Originals in that case are still available. They are to be handed over to you, so that you may have everything.

In five years, the bar-shields will have made their way, if proceeded with on my lines. The history of the case is in these papers—how it is viewed to-day is a matter of indifference to me, just as in the case of all the innovations which I have introduced, all of which met with constant resistance and no belief at first, even among my own staff at the Works.

Above all, I urge you never to come to a final decision by yourself, never to take action on the opinion of one person, but to deal with everything, and have everything dealt with, on committee lines. Every arbitrary exception brings its punishment, and always has done.—You must have sure and reliable men and resources in readiness in all departments.

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[1] At the time of the deep depression of 1874, Krupp began more and more to share his thoughts and his cares with his 20-year-old son, in order in this manner to introduce him gradually to his future sphere of duties.

[2] cf. letter of 7.12.1873, p. 300.

The Hill, 16.7.1874.

KRUPP *to the* PROKURA.

. . . Further, in the approaching danger of Socialism and Communism, as well as of animosity against religion, we must watch, with prudent foresight and without attracting attention, the disposition and doings of our men, and have them watched, so that no disturbance can suddenly arise which, with foresight, might have been avoided. Everyone is free to believe what he likes, but must remain loyally and peacefully inclined. Anyone who offends against this, and arouses well-founded doubts of his attitude, must be discharged in a legal manner, without giving any reasons except that there is no longer any work for him.

Moreover, it is altogether essential to make comparisons of the wages and the profit on what is produced. 5 years ago we had higher selling prices and substantially lower wages. No industry can continue if it only earns enough to pay the wages ; in the long run any industry will collapse in such circumstances. The workman was favoured when he was in demand on account of an excess of work. Now we are going back below the old standard ; we have as depressed markets as have ever existed for all products in which there is competition. Gradually discharged men from elsewhere will present themselves (also scamps). The best, however, will of their own accord content themselves with lower wages, and an exchange will have to take place. . . . At present it is less of a hardship when a man is discharged, since the harvest employs a number of men. The bulk of the offers to take work at low rates will not come until after the harvest.

The Hill, 22.8.1874.

Krupp *to* Goose.[1]

After the fresh disclosure of yesterday,[2] I am quite disheartened. What I must now do, both as a man of honour and as one who does not seek anyone's unhappiness, shall be decided by Friedberg. Whatever happens, the auditing, as now determined upon, must be taken seriously. . . .

My purpose in writing is to tell you that, as you cannot leave, nor can I, and as a discussion here can be equally decisive, since every question has to be settled here, it would probably be best if you were at once to invite Herr Nusser in my name to come to Essen[3] (of course at the firm's expense), and if he were to go straight to the Works or to the "Essener Hof," and I were to see him at the Garden House or the Hostel. The conference would be principally conducted by you, after I have made his acquaintance.

Ask him to come soon. A couple of days would suffice.

The Hill, 6.9.1874.

Krupp *to* Goose.

Please settle every question as thoroughly as possible with Herr Meyer and his colleagues, so that I shall be saved from repeating anything about which I have already spoken. I am therefore writing down in great haste what I have to draw attention to, in order to spare myself negotiations or discussions as much as possible. I feel myself failing daily in vitality, and am almost beginning to doubt whether I shall live to see good fortune return. If, however, I must in addition *fight for* something, if affairs do not run smoothly, then it will soon be all up with me. I urge you to bear this in mind. . . .

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[1] Goose was a lawyer who had been engaged by Krupp in 1872, on the recommendation of Friedberg, Under Secretary of State, to strengthen the overburdened Prokura, and, in particular, to complete the General Regulations. He belonged to the Prokura until 1882.

[2] The "disclosure" related to errors in the costings of recent years, which had escaped detection, and had led to exaggerated estimates of the assets of the Works in the balance-sheets of the boom years,—estimates which proved untenable when the slump set in. The realization of the errors had a positively crushing effect on Krupp.

[3] Nusser was to start the Audit Office, which was then established and is still in existence.

If there was one thing in Alfred Krupp's life which, amid toil and anxiety and even physical suffering, set him up once more, it was a fight. Krupp's was a fighting nature to the end of his days. He did not go in search of fights ; he loathed them as he loathed war, for all that he was a designer and maker of guns ; but he never shirked a fight. And in the difficult years from 1873 onwards he was able to draw plentifully on this secret source of strength. His struggle with the military authorities in his own country for the right of ownership in his own inventions took dramatic shape at times : he actually saw his drawings turned over to his rivals. He had supplied trial guns for field artillery to Austria, with the consent of the German Emperor ; but while the Austrians were ready to take advantage of his methods of construction, they preferred to give employment to their home industries. He hoped to conquer the world market with an invention of a new type of armour protection, but even his own designers were against him ; they had more confidence in the Gruson case-hardened turrets than in Krupp's heavy bar armour. This involved him in struggle all along the line, and it was really this struggle which kept him young throughout the latter half of the 'seventies.

Middle of October, 1874.

KRUPP *to the* PROKURA.

I hope Herr Gross has read everything that I wrote on the matter,[1] and has given explanations accordingly.

(1) That we shall not allow anything in our design to be revealed directly or indirectly to manufacturers, and that no imitation must be accepted.

(2) If, now that everything expected of us has been fulfilled, the authorities turn to the manufacturers in their

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[1] The matter of the Austrian order for field-guns, which had been thrown into uncertainty by the preference in Austria for bronze guns. (See Krupp's letter from Naples, 15.4.1873.)

own country, it must be inferred that we have been the victims of misrepresentation, having been allowed to suppose that satisfactory results of trial would entitle us to the order. The overtures did not come from us ; we were approached, and on the strength of that were prepared to serve Austria. The step taken in giving orders to the Austrian industry is a dangerous one for us, since it opens prospects to these people, and they will insist on their realization and on indulgence. Thus it is essential that energetic action shall be taken in advance to prevent this.

The Hill, 22.12.1874.

ALFRED KRUPP *to* FRIEDRICH ALFRED KRUPP.[1]

My dear Fritz,

Since you went I have been intending every day to use the first free hour to write to you. Up to to-day I have had no chance to do so, except for a memorandum on business matters, which should reach you through the Works. I am waiting now with impatience for definite news from Dr. Schmidt that you have completely recovered again, and meanwhile I am glad that you are doing well. I am vegetating still with alternating nerve trouble and colds, things that people who are free from them think little of. My time is as full of cares as ever, and I have to go on and on writing. I should never have had all these cares and anxieties and all the work, if those concerned had done their duty. Gradually order will emerge, and perhaps not too late. But it is difficult to replant a sense of order and duty where there has grown up a general tendency to irresponsibility and indolence. There is more antagonism than loyalty, and my old idea that loyalty is to be found everywhere is proving more and more illusory. It grieves me inexpressibly that Richard Eichhoff[2] should have been the first to start the trouble. I should willingly have let many others go instead, men without sincerity. Unquestionably several others must go, and we must steadily get rid of the ceremoniousness which has become habitual with us. . . . Unfortunately Longsdon and Meyer cannot always be here. Both have done great service in improving matters. Unfortunately you too are now missing from the executive work and from service as my mouthpiece. Herr Minssen is giving great satisfaction and will be a strength to us. But we are still without anyone of any great capacity for the commercial side—with a comprehensive grasp of the whole business and the ability to look far ahead and around. I am sorry that you were unable to read the copies of my letters to the Procura, to make extracts from them and to index their contents, and similarly with other letters which I have sent to the Procura. They contain my life experience and my principles, to which alone I owe my success, and the non-observance of which was the sole cause of the interruption of that success. May this lesson suffice for all time to bring back a strict system of orderliness. You must exercise very great caution in the choice of your friends. Not everyone whom I trusted has stood the test of friendship since I have been known to be away and my supervision has been no longer felt. But everything that has been done or neglected will now be brought to light. This is to let you know to-day in general terms how matters stand, what must be done, and what I must most earnestly recommend to you for the future. I shall write you in more detail as occasion offers. For to-day I will close, as I have just been sent for and the letter will probably go by the afternoon post.

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[1] Fritz had been ill for two months with rheumatism, and had gone to Egypt for the winter.

[2] Frau Krupp's cousin R. Eichhoff had resigned in the summer owing to trouble over the management of the Works in his charge.

I read everything you two do and write about with the greatest interest, and pass the correspondence on to Mamma, who reads the letters from both of you.

Every day I am with you in spirit, and all my heartiest good wishes are always with you. . . .

The Hill, 31.12.1874.

Krupp *to the* Prokura.

Borsig's dismissals and all the others are at last bringing about the inevitable working-class distress resulting from past over-production.

The situation and the impression made must now be turned to account. First of all we must introduce for all time the strictest organization of the control of labour, and dismiss every recalcitrant, and also any foremen still left who may be beyond reform ; in the second place, we must not be afraid of bringing wages to a fair relationship and correspondence with the product. We are paying, if not a full million, certainly half a million more than when prices were better, 6–8 years ago, and than can continue indefinitely.

No one can pretend that living is dearer than formerly. For our people it is much cheaper than formerly. Rent may be an exception in a few instances.

I want to see sound balance-sheets for all those of us who are in charge of the main driving machinery of industry. In the past I have always raised wages without waiting to be asked, and later the Procura has done the same ; why should we not now have the courage to restore the proper proportions by the speediest further reduction ? First, however, the men must be prepared for dismissals.

Essen, 31.12.1874.

Alfred Krupp *to* Friedrich Alfred
Krupp, Cairo.

My dear Fritz,

I telegraphed you to-day after Dr. Dingler's visit yesterday from Constantinople. He will go to Cairo about February in search of railway contracts. He has connexions, but it will be well if he can profit by your introduction.—Accordingly, I telegraphed that I am prepared to undertake the whole railway to Darfur, including the whole of the earthworks, so that you may go at an early date to talk to such people as may be interested in the matter and have views of their own as to an enterprise of this sort. If the Khedive is interested and you have an opportunity of communicating my readiness to him directly or indirectly, this cannot but be of advantage if he has the confidence that one would wish, a confidence which I cannot doubt that I deserve, and which our latest supplies will probably have increased. I am, of course, not interested in the permanent way, the bridges, viaducts, buildings, etc., and our principal interest is in the rails, the axles and wheels and the springs ; still, the whole thing is of such importance that we may well undertake extra labour and trouble, and I assume that the Khedive would rather have to do with a single contractor than with several. All the civil engineering, for instance, I should turn over to a board which would be composed of the best known engineers, especially English ones from among Longsdon's acquaintance. Ways and means would be found in the course of discussion. As I said, I am not anxious for the whole thing, but should be all the more ready to undertake it if there were no very great difficulties of construction, if the line ran overland and through deserts, and did not include specially difficult river crossings, tunnels, and the like ; if, in a word, it does not involve any special risk ; for I have no desire to lose on the constructive work, but on the other hand should readily content myself with a moderate manufacturing profit on a very large contract. I assume that the line would be 2–300 geographical miles to Darfur. We could make the rails in 2 years, and if double the quantity were required we can bring in our friends Menelaus[1] and others, who get their ore from the same Spanish mines. . . . My initiative is based only on a newspaper report ; it is possible, of course, that the report is baseless and that there is no question at present of any such work, that the report is only correct in part or not at all. Even in that case none of the brainwork and not a line of writing will have been wasted ; a similar case will turn up later and we shall have thought it out in advance and can make use of our conclusions. It has been an old rule of mine to think out every possibility in advance, generally ten years in advance, and consequently I have never been at a loss but have always had my decision ready at once. Many clever people may regard that as a superfluity, and all mentally lazy people always will ; but I have always found it pay, just as a Chief of Staff always has his further movements thought out and pre-arranged far ahead for every conceivable case in the event either of victory or defeat. The particular business and this general principle are of such importance that I am gladly filling up this last hour of the old year with them. Well—*basta* ! So much for that !

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[1] Director of the Dowlais Ironworks.

So, once more our best wishes for you and friend Schmidt. God keep you.

Essen, 1.1.1875.

ALFRED KRUPP *to* FRIEDRICH ALFRED
KRUPP, CAIRO.

On business, for Fritz.

The change of system in rail manufacture brings the prospect of possible competition with every other source, and consequently of a big growth of this industry, which is a condition of the remunerativeness of the bulk of the plant in the Works, mines and foundries. In future the Works must supply more than double the quantity of rails which has ever been produced at the busiest period ; only then will costs and receipts balance. Crumbs of orders, 5 to 10,000 tons, cannot fill the gap. We must be assured as far as possible of full activity for 2 years ahead, and for this we need primarily the new lines which will come one after another until, centuries ahead, all the big continents, Africa, America, Asia, are traversed by such lines, and so arrive at the stage of our civilized countries, when connecting lines, branch lines, and so on, will keep the industry humming to the end of the world—unless some gas-bag comes to upset this anticipation with air traffic. Assuming that as yet there is no substance at all in the reported project of a new railway to Darfur, even so the assumption of its substance is a useful opportunity for setting out considerations and laying down rules for similar cases. Whether it be in Chile or China, Japan or Australia, where-ever new railways are to be laid down, it is absolutely necessary that we should come forward and try to get the contract for rails. . . .

Such an endless variety of circumstances is conceivable that it is impossible to lay down rules to meet every case. The purpose of these remarks is merely to call attention to the aims we must follow and the things we must avoid. Caution, in the interest of the prestige which the success of any such great enterprise will bring, and to prevent any avoidable loss,—caution in both directions. You can be guided in what you say on any occasion by these hints, and I recommend you to keep them in mind for other cases.

The following undated memorandum belongs to the subject above discussed.

I harbour a secret hope that the small beginnings of the past may lead not only to the profitable supply of large quantities for existing railway systems, a business in itself worth many millions, but that they may bring the first contracts for material for new railways and so provide work for years. For a long time past I have been revolving the idea of connecting Eastern Asia with Europe by a railway, and I find that there has been a surprising amount of preliminary work done in regard to this project, far more than I had expected, much of it cutting across my original idea and modifying it.

I shall pursue the railway idea further on my own account, with the help of Herr Pieper[1] and Dr. Schmidt, and the works, maps, and writings which the two are looking for, or which are at hand here. . . .

Years may pass before anything of the sort materializes, and whether the next route which comes into question will be hundreds of miles further eastwards, westwards, or northwards is at present unforeseeable.

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[1] Dr. Johannes Pieper, brother of the Albert Pieper who died in 1870. Dr. J. Pieper became Krupp's private secretary and constant travelling companion in 1873.

Essen, 26.1.1875.

ALFRED KRUPP *to* FRIEDRICH
ALFRED KRUPP.

I am delighted to see from the photographs you sent that you already look stronger than ever. My hopes are rising again, my anxieties about you are now to come to an end—the great anxiety about your life and health—now I can begin to confine them to matters of your future. And the first of all, next to you, are the Works and the many thousand families. The welfare of the former is dependent on the welfare and conduct of the latter. Hard work is being put in on organization, and though the immediate prospects are not rosy, I am beginning to pick up courage again. Laziness and indifference are giving place to new energies and method, and anyone, without exception, who cannot or will not co-operate in the same spirit has to go. Now we are close to 17th February, the day of your coming of age, and of your passing into a position of rare importance in regard to rights and duties. May God give you strength always to make the most of both.

27th January.

I was prevented from writing more. There are endless more things that I should like to pass on to you for your life's journey. To-day, however, there is only room for the most essential. I will let you know about various circumstances, about persons' characters and qualities, their worth or their unserviceability. First of all I will tell you my wishes in regard to your future position and activities and your suitable environment.

I hope that, without interfering with your recovery, you will have time to study. Who knows how long I may have to live ! You can imagine how I long for you to be back here, so soon as you can stand the climate. You must try to take a position as soon as possible in the centre of the administration, in preparation for the time when you will have to take decisions in my place, instead of with me.

I don't actually feel particularly unwell, but just that I have not the strength for anything and that I have to suffer every time I try to call it up. Meanwhile I have every minute occupied with work as long as my strength allows. The work is still unceasing. But I am beginning to see the traces of the new order, and how things are now getting done on all sides that in the past I suggested and arranged only to meet with inattention or resistance.

The advent of Longsdon and Meyer was a blessing for the Works. These two, and Goose, are putting new life and order into them. We shall soon arrive at the conviction that Richard Eichhoff's retirement was a necessity; also that he must never again take over any position, on account of his domineering and high-handed ways.

Our journey to Constantinople is no longer likely. Instead of a visit we shall have to adopt a stiff tone once more, as they[1] are still failing to fulfil the contract in regard to the guarantee of payments. There is also very little likelihood of my being able to go to meet you.

I am with you in spirit ; my hopes are with you. God be with you both.

The Hill, 31.1.1875.

KRUPP *to* GROSS.

I think in the history of the gun we must render homage not only to the Kaiser but to General von Voigts-Rhetz and General von Neumann.

In 1849, when Neumann was a Captain, he took part with great interest in the development of the gun, from the time of the trials of the 3-pounder, making tests and exerting himself personally. The rifling and completion of the trial gun took place under his supervision. The vigour with which he maintained his attitude towards the Testing Committee is well-known apart from what is evident from his many decorations.

Von Voigts-Rhetz, when Director of the General Department, placed his views and his conviction before the King, and it was due to his initiative that the King had 300 guns ordered at a stroke, instead of 100. Thus, where mention is made of this first order for 300 guns, it would be well to insert a reference to the service rendered by Gen. v. V.-R. in securing the Cabinet decision, and to the constant interest shown by Gen. v. V.-Rhetz in this crucible-steel gun and the perfecting of it, throughout the period of development. It was largely thanks to his support that the new field gun gained recognition and was brought into use—against the opposition of a powerful majority who were actually struggling to revert to bronze guns. I should be very glad to see everything possible said in honour of the General, particularly now, in the evening of his life, when he is no longer playing any active part, so that at least he might see that we are loyal and just and grateful to him. Who knows how much longer he may have to live? Of course, mention must be made of the exalted and astonishing interest shown by the King, without whose constant sympathy for this effort in Prussia the crucible-steel gun would never have come into use, and to whose interest in the matter and exalted insight it is alone attributable that Prussia is now the best armed State.

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[1] The Turks.

The Hill, 18.2.1875.

ALFRED KRUPP *to* FRIEDRICH ALFRED KRUPP.

Yesterday we celebrated your birthday. Mamma will tell you all about it. I am sorry I have not managed to write, though I have in reserve many more things of importance to pass on to you. (I have been rather unwell once more, and it does not add to one's strength.) To-day I will simply give you a hint of what I shall write to you about at greater length. The first thing is accounting, finance, calculation. In these things you must always be completely at home. No one must be able to lead you astray, and only then will you be safe from what I want to warn you against—from self-interested and intriguing persons ever making you abandon the helm and allow yourself to fall into the hands of a joint-stock company. The more promising the future may be for the Works, the easier it will be for people to set traps for you. Suppose our loyal and trustworthy colleagues are no longer with you (dead, retired or the like), and that the management is in the hands of very competent people, into whose hearts, however, it is impossible to see. Suppose one of these company-promoting beasts of prey, and there is no denying their existence, wins over one or two of the men of initiative in the management by flattering proposals and by holding before them prospects of part ownership and big gains, then, however sound the situation may be to begin with, they can so complicate matters and get you so involved that you would be compelled to sacrifice your position as owner. I am only picturing to you the things that can happen if the owner of the concern does not keep his eyes open and watch affairs for himself. It is quite easy to do this and calls for nothing more than sound bookkeeping and financial arrangements. All this you will soon learn, much more quickly and easily than I was able to pick up the practical work needed to provide the wherewithal for keeping the kitchen warm.

The mail goes to-day. I may be unable to write any more, and so close now, with love and a kiss. . . .

Garden House,[1] 1.3.1875.

KRUPP *to* GOOSE.

I am writing here for you my impression of my conversation of to-day, simply for your private information—Herr Meyer may see this as well. But there is no point in showing it to anyone else. If no one finds any satisfaction in fighting for the right, there will soon be an end of us. Nothing is to be had without fighting for it, and but for fighting everything would long ago have foundered.

I count on you and Meyer.

. . . .

On talking it over with Richter and Gross I have discovered no enthusiasm for our action; they think the preference will be for bronze after all,[1] though our silence would be a plain enough indication that we abandoned our rights, and Austria could then make as many steel guns as she chose from our drawings and designs, as soon as it suited her.

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[1] The Garden House, built in 1859–60 and lived in by Krupp until 1864, was used from then on when visitors came and for discussions.

It almost seems to me that everyone would be satisfied to see the matter dropped. But I have no intention of letting any opportunity be missed or anything which I regard as necessary taken lightly. Certainly no intention whatever where so much is at issue as in this business.

Nothing of the sort would have been attempted without my insistence—so it will be in future if there is no one at the helm watching and working with my son. They will all prefer to let matters take their course as may please God and Destiny, and never say a word to anyone which might make bad blood, even if they are entirely in the right. So the Works will go to sleep, just as they have already fallen back considerably from a technical standpoint.

That must be prevented. Prehn is actually against the history of the gun ![2]

The Hill, 23.3.1875.

KRUPP *to the* PROKURA.

I have just read that Strousberg is gaining ground in Austria, that he has signed a contract for a railway, has acquired an important waggon works, and is to have the Sigl works, and consequently a dominating position.—

It is no longer now merely a question of our security in future dealings with his establishment and how long they can continue, but we must quite certainly expect to find him setting up works for railway material, rails, wheels and so on, and to be full of big schemes—that he will take up crucible steel manufacture, that he will try to tempt people away from us *at any price*, that he will try to introduce gun manufacture. He may not succeed in finding traitors in our camp. But I have no doubt that he would come to an understanding with Baare of Bochum, and I advise the Prokura to keep their eyes open ; Herr Meyer should also be informed of this.[1]

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[1] This refers to the Austrian order for field-guns.

[2] This was certainly not the case. Prehn, who since 1873 had been head of the Krupp firing grounds, was only opposed to the publication of the history in such a way as to run the risk of causing irritation.

Written in the afternoon
of the 29th March, 1875.

KRUPP *to the* PROKURA *and* GOOSE.

I am taking it for granted that the history of the gun contains

nothing untrue,
nothing unjust or
wounding, and also nothing that we are not entitled to mention.[2]

I am taking it for granted that we have guarded against any possible disclaimer or rejoinder, since we have long been aware that even highly placed artillery officers were misinformed concerning facts, that they charged us with passing on to other quarters designs and projectiles of Prussian origin,—whereas the reverse was the truth, and we had made use for Prussia of designs at which we had arrived in the course of working, for instance, on Russian orders.

I am taking it for granted that everyone will do his best to get over this difficulty, for we need this history of the development for our direct customers, whom we want to have confidence in us and to give us orders. The history makes it plain that the gun is entirely our work and that the Prussian artillery is a fruit of it and not its origin.—

. . . .

We have certainly given no assurance that after Prussia's requirements have been met no further field guns shall be made and that we would rather break with the whole world than go on working, that we are ready to look quietly on while our workers are taken from us by other works in order to make these jacketed guns.—We can only keep the Works going and the industry in being for the State if we are free to work up to the limit of our capacity. . . . I can only pay my debts by working. (Last year was the worst in my whole career.) I hope Herr Gross will come back[1] so soon as Meyer can spare him, in order to discuss, in collaboration with those who have knowledge of the matter, the measures and the replies which are now most urgently needed.

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[1] Strousberg became bankrupt in 1875.—Translator.

[2] The General War Department had just replied to the transmission of the History with a request that it should " not be allowed to become public property, still less come to the knowledge of foreign States."

We must know what we have to do, and we must be able to answer for ourselves before God and the Kaiser.

The Hill, 1/5.4.1875.

KRUPP *to the* PROKURA.

I am perfectly astounded at the line taken :

After all the precautions we have taken to protect our interests, we are to be fooled and to let them snap their fingers at us ! In refusing its sanction to our agreement with the Committee the Ministry is making itself responsible for profiting by an abuse of its position, by the humiliation of a subordinate authority in which we had to place our trust. . . . How can they advise us to go to law ! but I should only have to repeat what I have said already.—

I must have some days' complete rest on account of my headache ; so the new Opus must remain unread for the present.

. . . .

If Herr Meyer does not bring back with him the declaration[2] which we have demanded, the journey has unfortunately failed, for everything else, apart from this declaration, is only of use in so far as it can be regarded as preparatory to compelling the declaration.—

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[1] From Vienna, where Gross and Meyer were carrying on the main struggle for the big order for field guns.

[2] That is, the declaration of Krupp's right of ownership in the design of the trial guns supplied to Vienna, and of intention to respect it.

Now I hope that I shall receive no further communications which can be dealt with without reference to me, on the strength of the explanations already given.

. . . .

The Minister of War must give us in writing his declaration that he recognizes the agreement come to with us by the Committee, and that the Ministry accepts the obligation of fulfilling the agreement—and if he does not do this we shall go to the Kaiser.—The Procura differs from my view—you still believe even now that Meyer will get the declaration from the Minister of War ; in my view that is a pure illusion.

. . . .

It is absurd to say that the question is objectless ; it had reference to a concrete object, from the very first letter. The assurance demanded and given in advance for protection against misuse of the material entrusted to it has to be confirmed by the Ministry because the concrete object, the steel guns and the designs, have already been entrusted to it. Have we not, unfortunately, supplied the guns ? Who still contends that the matter is objectless ?

. . . .

The Testing Committee did not enter into correspondence with us without the approval of the Minister ; quite certainly that authority is not free to communicate with foreigners at its will. The promise made to us by the Committee could not be made without the assurance of the Minister's assent.

The reservation of the Minister's approval was nothing but a necessary formality, since the subordinate authority is not free to act in the Minister's name. If it had been reasonable for us to suppose that there was any doubt as to the Minister's sanction, we should have been reckless to agree to the consignments, and if we fail to secure the required comprehensive declaration from the Minister (direct or through approaching the Kaiser), we shall have had one more costly lesson which might have been spared us had we shown less trust and more caution.

All vexations and blows that do not come from above, like lightning and death, are to be attributed to lack of caution. . . .

Vienna, 21.6.1875.

KRUPP *to* GOOSE, VIENNA.

No wonder if they think we are expecting decorations by way of settling the controversy, for what is honour in Austria?—We always put honour first!

But each has his own conception of it. Falstaff had yet another. In Austria it is at all times an external—recognition, prestige.—For us the definition of honour is the consciousness of fulfilment of duty and what is right and the claim to recognition of this—even though we may readily dispense with public recognition.

And now, to settle the matter, after our repeated demand for recognition as the first essential, we are to expect a royalty. That, however, should be offered us after our demand has been accepted in principle.

So, then, first make sure that they agree in principle; then there is no particular hurry about fixing the royalty. The settlement of this sum is not the first but the last business; we can come to terms about that between Essen and here.

The Hill, 24.8.75.

ALFRED KRUPP *to* FRIEDRICH ALFRED KRUPP.

Fritz, ask Herr Neu whether he can find out who is now perhaps the best informed civil engineer in Prussia, with the widest knowledge of foreign experience and progress—England, France, Belgium, Russia, America. If he is full of admiration of the cast iron cupolas of Gruson and *shares the responsibility* for work of that sort, I can make no use of him, even though what is wanted is not the designing of armour plate. We want to find someone from the Engineers, familiar with all the details of the things that have to be watched in regard to situation, protection, communication, munition depot, accommodation for crews, etc. Embankments, arches, chambers above and below ground, perhaps stables and huts, in a word all sorts of things are wanted of which I have no knowledge, nor has the best gunnery expert, and all the details we must supply ourselves if we want to discuss or put forward a project for a State.[1]

. . . Colonel Nicaise[2] told me that he would recommend above anyone else General Brialmont, his brother-in-law, who is in Belgium ; he fortified Antwerp and is familiar with everything. He is very interested in my armour plate and is coming here soon with Brialmont. But that is not enough—he is only coming for one day—we require permanent assistance and if possible one of our own countrymen, who is free to come.—Nicaise told me this : A Major Schumann, of the Prussian Engineers, recently went on the retired list. He knows him, and considers him very well informed. I gather that he is young and well off, living on his own property near Mainz. Find out more about him through Herren Neu, Gross, Prehn, etc. According to the results of those enquiries I should then want you first to go to see him and ask him whether he is interested in my plans, whether he is ready to have a talk with me or with my technical people to make the matter clear, whether I should go to him or he cares to come here, whether he is able and willing to recommend us anyone, and so on. I am writing in all this detail in order not to have to repeat anything.—To be kept, and copy to the Procura.

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[1] This was the question of the so-called " armoured gun," a heavy gun behind an armour plated shield ; Krupp was busily occupied with this question from 1875 onward.

[2] The Belgian Minister of War.

The Hill, 7.9.75.

Krupp *to the* **Prokura.**

Questions aiming at the production of a motive and driving force from powder.[1]

Assume that a quantity of powder is burnt in a closed container of a strength to stand about double the maximum stress required.

Assume that a pressure of 50 or 100 atmospheres is wanted.

The question is whether, in order to avoid big intermittent increases of stress, the powder can be gradually introduced into the container, so that the gas consumed may make up the lost degree of stress—whether the result of escape or consumption.—If fresh units of powder are introduced into the cylinder, can they be burnt in it or must that be done in an adjoining space, allowing the product to pass through valves into the reservoir? Can fresh powder be ignited in the powder gases? Can this be done by an electric current with the reservoir permanently closed? Would not the gases then be re-ignited and an explosion so made inevitable?—These are questions for physicists, which I cannot solve.

If, however, the difficulties and dangers indicated should not be insuperable, I think the simplest, cheapest, inexhaustible means would have been discovered for counterbalancing the weight of the gun, so that the reduction of the elevation should not be destroyed by the dead load but should come about as easily as in naval guns. Naturally it is only suggested that this should be applied to the heaviest calibres.—

Further question.—

Do gases retain their pressure when they cool?—assuming that complete gas-tightness can be secured. Given a favourable answer to these questions, what is wanted is an accurate and safe inlet and outlet for the stream of gas. That will still be a very difficult matter. I think, however, that there exists something of the sort already, for instance, in air-guns. Should it be rendered possible by means of cocks, valves or the like to regulate the outflow, and to produce gas-tight pistons, would not the question arise whether a permanent driving force can be obtained by the use of powder?—This was one of my dreams fifty years ago, and comes back to me when I need an elastic material for pressure and lifting, enabling me to dispense with water, oil, firing and steam, or gearing and other power sources.

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[1] The question remained without result at the time, like so many others raised by Krupp. This letter, however, is not without interest in view of the often repeated attempts, made once more in 1928 by the firm of Opel, to use gunpowder as a driving force.

28th November, 1875.

KRUPP *to* LONGSDON.[1]

There is no reason to allow our men to do less work or to do it with less skill and attention than any nation of the world.

Our people are only inferior to other, if bad leaders are on the head.

Our people receive more education than any other people do—more than the English, French, American labouring classes. The age of our industry is from all countries the nearest to the English. But this age is not necessary at all for the joungest nation, the American surprise us by their industry and by their invention.

There is no doubt, that intelligence and skill of the German is much more than necessary for the finish of our making.[2] Now see, what has done our Army!—Is there any army of the world, that ever did more in shorter time? Have the exertions of them during the two last wars testified the utmost bodily strength and perseverance?—If such qualities are utilised, will this not be sufficient for any Establishment? Such people and such control as usual in England will do the same as the English, and suppose we have the best selection of English people under the command of our managers—for sure, they will be not better than ours, after having made acquaintance with the indifference of our managers in general. We should not make any concession to the motif of less intelligence, skill and strength of our people and therefore, I regret very much, that this motif is the cause of having decided for a less perfect cogging mill, where we want more people and hands and work with more expense than other manufacturers. I write this for the purpose, that Mr. Longsdon might be perfectly aware of the real circumstances and causes in order to go to the very source of the evil, which took roots in our dominion only since a number of years and which is to be and will be exterminated by energy and that assistance which—I trust to a small number of true friends—will be found.

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[1] Written in English by Krupp. Alfred Longsdon, born 1827, was representative of the firm of Krupp in England from 1856 onward, and in Alfred Krupp's later years was his most trusted friend and adviser.

[2] i.e., for the faultless manufacture of our products.

I recommand these observation to the purpose to make no allowance to want of skill and experience or strength. Strong people are also to be found. The heads, cheap[1] leaders, foremen, masters, must only be forced to do their duty or be sent to the devil. Then will all go right.

In January 1876 the conflict with the military authorities which had, so to speak, been latent until then broke out into activity with Krupp's long letter or memorial to the Director of the General War Department, the younger Voigts-Rhetz. Krupp charged the War Ministry with ingratitude, held stiffly to his sole right to supply crucible-steel guns to the State, and scarcely concealed his intention to retire from business if the fruits of his inventions and his twenty years of sacrifice continued to be surrendered to others. With his habitual ruthlessness he drew the old Kaiser at once into the conflict, so bringing the sharpest possible pressure to bear on the decision. Any opposition, even from his friends and in his own firm, only aroused him to more energetic activity, as he saw in it simply fresh evidence that he must still force a decision himself on outstanding questions of such importance, and dared not leave them to his successor and his advisors. He failed to realize that the issues were such as could not be definitely settled, since, as was pointed out to him in service quarters, no Minister can ever take responsibility for the possibly divergent view of his successor. From time to time Krupp often made business difficult for his Prokura through his abruptness, but on the whole he still continued to secure respect for the special position of his firm in big decisions, not on legal grounds but because it had to be admitted that the reliability guaranteed by his long experience could not yet be expected from his competitors.

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[1] i.e., chief.

Essen, 11.1.1876.

KRUPP *to* GENERAL JULIUS VON VOIGTS-RHETZ.

Honoured Sir,

I ask your permission for a confidential statement which I feel bound to make. I only regret that the matter is concerned with business interests, the championing of which I should have preferred to leave to the Prokura which for ten years past has directed all external business in my place. In this case, however, I feel myself bound, in view of the position which you are taking up, to express candidly to you, the brother of my noblest friend, who have yourself many times given proof of your goodwill towards me, my view as to the present relations of my establishment with the Ministry and what may be ahead of us. It can scarcely be necessary for me to assure you that I am not speculating on receiving special favours, nor do I expect any answer. I am only anxious not to withhold from you our experience, conviction, feeling and first principles here, to which it may be that we shall have to make further reference later—and, in order to come up to what is due from me, am writing quite frankly.—

You are acquainted with the history of the crucible-steel gun. My readiness to be of service met with constant refusals from the time when Herr von Boyen was Minister[1]—in the 'forties I sent him my first (actually hollow forged) crucible-steel barrels ; instead of testing them he sent them back with the remark that " the Prussian weapon has no need of further perfection "—until Kunowsky ceased to be in charge of the technical work involved ; until at last your brother became head of the General Department. Other States had already got ahead, and there was lost ground to be recovered —this did not escape him. The energetic introduction of the crucible-steel gun into Prussia was his service to the country, and I owe to his friendship, which is a source of pride to me, his expressed appreciation of my persistence and my motives. He would have treated an egoist with contempt. The views of His Majesty the Kaiser rest on the same basis. It is well known how it was due to the insight of the highest in the land, that, in spite of the opposition of high authorities and of fresh obstacles put in the way time after time, the crucible-steel gun was at last introduced generally in the most various calibres and for the most varied purposes. Other great States experimented at their own cost and (as England, for instance) not only indemnified the inventor but shewed him great favour ; I have experimented at my own cost and have offered the results for the service of the State. In so doing I have saved the State expense, risk, and time. The State might have spent millions and would still not have reached the present position. Here in Prussia every effort was being made as lately as 1868 to get the crucible-steel gun abandoned and to go over to the English make. Again a more exalted hand came to our rescue, as in many other instances of obstinate opposition. But for my disregard of all else, above all my disregard for my own interests, we should have had nothing to this day. Save for the intervention from an exalted quarter, we were destined to be the last of all. Instead of the new field gun of crucible steel, the policy in high quarters was to reintroduce the old field gun of bronze. . . .

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[1] Marginal note : " Witten and Bochum were making all the small arms for the State ; I, the first comer, who had the pains and the merit of their introduction, who had to have the trials made by Marshal Soult because they were refused here, went empty away. Not till I brought up the evidence from France did they agree to let me send samples for trial to Spandau ; the initiative was entirely mine, but the reward went entirely to my rivals."

It is well known that I have sunk the greater part of my fortune in the plant required for the manufacture of guns, including the costly ironstone mines. As a result of the progress along the road to the creation of a great industry—entirely with the object of honourably serving our great nation (not from desire for gain or from ambition)—I have expended a great fortune and fallen into debt. I have to meet my liabilities and repay a large capital sum in a few years, and the future has thus no attractive appearance. It is in such circumstances that I learn that a tender has been invited from the firm by the Royal General Department for 9 unfinished 15 cm. guns, and that a like invitation has been issued to other Works. . . .

In this we can, unfortunately, only see the intention to withdraw from our establishment the goodwill, the appreciation and the position won by loyal service, now that in the effort to meet the utmost requirements of the State it has been extended to its present great dimensions. Proof of capacity and goodwill has already been given ; it is also well known that the scale of the Works makes it necessary, at times when the German demand is small, to seek contracts from friendly foreign countries, since the whole complex can only endure and be maintained in constant readiness for service if continuous activity is assured. All the work of this sort that Germany could ever give would be inadequate to make the plant remunerative. That, however, is the condition of existence for it ; and its continuance in private ownership, as against transfer to the control of a company, is of considerable advantage. Apart from this, it would be doubly unjust to employ other works, which have done nothing towards the creation of the crucible-steel gun, which merely imitate what they have found out by fair means or foul, and on whose soil seed would be sown that is mine.

Is it the intention of the State to invite the parasites to copy the product which sprang from here, and so to make them into rivals on an equal footing with us ? It is intelligible that such a competitor should strive to secure this at any price, even if he had to supply a certain number of guns at a great sacrifice or actually without payment. The way would thus be opened for him to the ends of the earth, and a cheaper and more effective advertisement would be unimaginable. He could recoup himself from later supplies, for he could make savings — unobserved — at the cost of durability. Cheaper prices imply savings, but woe to us all if that system were introduced. Judged from a commercial point of view, the gunmaker must be a spendthrift, he must make only the best, regardless of cost. My own natural inclination is to work on these lines, but has a joint stock company, with its changing ownership, the same interest ? I must make sure that the present product of the Works remains a credit to me 20 and 50 years from now, that my remotest descendants enjoy the benefit of it ; whereas the shares in a company often change ownership in a few years, and all the shareholders ever think of is the next dividend.

My establishment keeps a great number of experts unceasingly at work, making and improving designs ; and experiments go on similarly without cessation. The great expense of this mounts up incessantly. Every innovation is intended first of all for the State, for the Works are always regarded by us as a national institution. Any new successes are at once communicated. The expenditure is mine ; the profits go to the State. And after this would the State be parsimonious with me, degrade me, set up rivals to me, humiliate me, instead of according the deserved recognition which I might actually have expected with much greater reason ? . . .

Berlin, 16.3.1876.

Krupp *to* Kaiser Wilhelm I.

Your Majesty,

In accordance with the All-Highest assent I have the honour to transmit a copy of a private letter of 11th January 1876 to Major-General von Voigts-Rhetz, Director of the General War Department.

I regret that, in the midst of a fresh revival of hopefulness and of a struggle against the injustices of the industrial situation, courage and confidence are being crippled by action from a quarter which should have been the first, in the interest of the country and of justice, to support my efforts. Of all the institutions in the world with which I have dealings, our country's Ordnance Department alone has lately been once more showing hostility to my establishment, and more than ever ; it will not rest until the Works have passed into the slavishly subservient hands of a joint-stock company, which it will dominate and experiment with at its will, and in which instead of a carefully formed body of highly trained specialists, with their experience and methodical programmes for future progress, a few pushing persons will be in charge and will once more have produced the old condition of unreliability of judgment and decision, with consequent mistakes and loss.

It is not the difficulties of the business situation, trouble and anxiety and temporary loss that would make me give up my Works—for perseverance will win—but the continuance of the treatment at present meted out to my establishment by the Ordnance authorities.

On the other hand, I recognize with gratitude that so far as the Royal Prussian Navy is concerned, though at first it was prejudiced against my product and was notoriously an admirer of the British ordnance, I have since enjoyed its unvarying recognition and confidence, as I have that of all other State and civil authorities in the German Empire.—

I have hesitated whether I should trouble Your Majesty with this none too pleasant communication ; but I have been considering the consequences of a breach and the ultimate disposal of my establishment, and as this would certainly be a still more unpleasant surprise, I was bound to prefer the present step.

I hope this may justify me before Your Majesty. My conscience assures me of the protection of my Judge, even against the All-Highest displeasure, on which certain members of those authorities have often speculated in the past.

Berlin, 29.3.1876.

Very confidential. MAJOR TRAUTMANN.[1]

Report of the course of the audience which His Majesty granted to Herr Krupp[2] on the 29th March 1876 from 12.30 to 1 p.m. (Notes taken by Dr. Pieper.)

GENERAL IMPRESSION. His Majesty was most kind and sympathetic, so dispersing at once any anxiety that had been felt. On the whole His Majesty seemed to share the views expressed by Herr Krupp or contained in his memorial.

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[1] Major Trautmann, retired, had been engaged by the firm of Krupp as consulting expert in gunnery questions and for special commissions.

[2] After the transmission of the foregoing memorial and letter on the question of competitive orders.

The audience.

H.M. : I have read your memorial ; as you authorized me to make official use of it I have made a few remarks on it and sent it to Albedyll.

Herr Krupp : In so doing Your Majesty has met an urgent desire of mine ; in the hope that something of the sort might have happened I brought a second copy of the memorial with me for Your Majesty ; I do not want anything but justice and fair dealing, but I must fight the matter through, however much it may cost me, even if it cost me my head.

H.M. went into some of the points in the memorial, remarking from time to time : " I have said so myself."

Herr Krupp : Not long ago Major Trautmann asked General von Voigts-Rhetz straight out : " What is it exactly that they have against the Works ? What is the reason of this ill-will ? " Instead of giving a plain answer v. V.-R. threatened that the time might come when the Works would be forbidden to export. Your Majesty, it is surely in the best interest of the State that there should be friendly relations between the Works and the State. I have made provision for ensuring that the Works shall continue to remain in the future in the hands of my family ; I have bought mines for 99 years in the hope that this will be so for at least that period. But when views of this sort are held, and that by the man who is supposed to be going to be the next War Minister (at this H.M. was greatly taken aback), how can that be hoped for ? I am not conscious of having given offence to General von Voigts-Rhetz ; of him of all men I should have expected that he would have inherited a friendly feeling from his brother. At the present moment the Works are least of all able to support oppressive measures ; what they want is help.—(Extracts from the accounts were then placed before H.M., who retained them.) I do not want to go away without speaking about the Minister of War ; the more I hear of him, the more I am convinced that he is a man of sterling uprightness ; if, therefore, injustice is done it cannot be his fault ; it is impossible for him to be acquainted with every detail ; the fault lies with the small men, the place-hunters, who make inaccurate representations to the Minister.

H.M. agreed altogether with this view

Herr Krupp : The matter must now be decided one way or the other ; I shall stop here indefinitely ; if desired I should be ready to give Your Majesty further information at any time.

Herr Krupp asked whether he might wait on the Kaiserin ; H.M. said that she was probably just going for a drive ; anyhow, he would soon have an opportunity of seeing her at dinner.

Herr Krupp : I was glad of this journey because it was a pleasure to me at last to convey to Your Majesty the guns that have been ready for so long ; I am all the more sorry that at the same time I have had to trouble Your Majesty with these unpleasant matters.

H.M. : *Bitte, bitte*—it is very kind of you to let me know about these things.

In the middle of the conversation H.M. said : "Do you realize that you are stirring up a wasps' nest ? " *Herr Krupp* : " Yes, I know, but it has got to be cleared up. This position of uncertainty must be ended, be the consequences what they may." All the time Herr Krupp pressed for " Light, clarity and truth."

The Hill, 5.10.1876.

KRUPP *to* COUNT VON FLEMMING,
ROYAL PRUSSIAN MINISTER,
KARLSRUHE.

Your Excellency,

I venture most obediently to ask you to be good enough to oblige me by handing the enclosed communication to His Majesty the Kaiser. I have chosen this way in order to avoid attracting notice and giving rise to idle talk by a direct address to His Majesty.

I will pass on now to the essence of the enclosure.—For a long time past I have been engaged day and night on a new ordnance system, which will entirely revolutionize the old system of fortresses and investment. The guns, the crews, the fortifications, everything is invulnerable.

I placed this innovation before His Majesty last spring in drawing and model, in accordance with my custom of putting everything first before the Kaiser. I bring nothing to fruition without his help, and without it we should not have got as far as we have in Prussia ; for I meet with nothing from the authorities but misapprehension.

If this invention, which I am convinced will stand every test just as all the earlier ones have done, should have to wait for recognition and introduction as long as has been my experience with everything in the past, I shall not live to see it ; for in the course of the present month I shall complete my fiftieth year of control of the Works, and I have already been long accustomed to greet the completion of every new year as an unexpected surprise—though with gratitude. In any case, this will probably remain my last personal work, and it is a consolation to me, and perhaps will serve towards propitiation and reconciliation for humanity, that it is devoted more to defence than to killing.

The details are public, as I have secured patent rights in all countries. No one believes in its practicability, with the exception of all who were present at the experimental tests. Your Excellency may have an opportunity of submitting the table.[1]

Berlin, 13.12.1876.

Krupp *to* Herr von Friedberg,
Minister.

My honoured Benefactor,

I am just back from Vienna, and was thinking that I was well on the road to agreement with President Maybach,[2] but have been surprised to receive a totally unexpected communication.

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[1] In the course of a reply on 7th October Count Flemming wrote :

" His Majesty graciously accepted your communication ; I think I may infer from some things he said about you and your good work that you will not lack in regard to your latest invention in the field of gunnery the support which you have enjoyed from the Kaiser in the past."

[2] Negotiations were proceeding for the entry of Maybach, who was then President of the State Railway Department, into the directorate of the firm of Krupp. The negotiations came to nothing, mainly because Maybach wanted unlimited powers as President within the Prokura, which it was impossible to grant him, out to regard for the older members.

I know how loaded with work you are ; I venture nevertheless to send you this letter in my embarrassment. I had asked Herr Maybach in drafting his proposals to endeavour to bring his wishes into harmony with the necessary consideration for the standing of the members of the Procura. The incompetent are dismissed, but those who have done good service, those who are competent and indispensable, the pillars of the establishment must not be slighted or their field restricted in the general improvement of organization and harmony. Meyer, Goose, Longsdon must not be treated as mere tools. Our interests and the questions to be dealt with are so many-sided, and all the qualities and experience of each individual are needed for judgment and decision in the complicated issues.

As their head, deciding matters on the strength of what they put forward, I regard their prior agreement as a condition of my action. Anyone who is not an expert must trust his colleague versed in the special point and must make no difficulties ; in this way arbitrary action is avoided—action of a sort which was, unfortunately, often taken in the past. I am responsible for anything to which two members subscribe, and in the past there has often been action taken, binding on the firm, through the signatures of two members who have had no knowledge of or no concern about what their colleagues' views might be.

Longsdon, for example, knows well that he has removed cancerous technical evils in administration and processes, and has introduced new and lucrative manufactures ; that he, my oldest friend, so devoted, so self-denying and modest, is indispensable to the Works ; that it is he who reorganized the Works when they were in such a state of neglect and made them remunerative once more ; that he is the chief person because he makes our work profitable (the further work of administration, the management of the property, is of secondary importance). Meyer is indispensable to me for finance, Goose with his industry and experience is a valuable member of the still incomplete Procura. In gaining a chief, such as I hoped for in Herr Maybach, I cannot set down these men ; all I was thinking of was that the chief would step into my place, that the chief would act as chairman, that he would more and more unite the members with a centre, especially in personal matters, and also represent me with the Procura, but not weaken the power of the members.

In this embarrassment, and in the danger of failing after all when so close to the realization of my purpose, and having no knowledge of how to carry the negotiations further (for I am no diplomat), I beg you to read the enclosure and be so kind as to let me know whether I may come to see you tomorrow, and if so at what time. . . .

Yours respectfully and faithfully,

1877 to 1887

[illegible]

1877 to 1887

On top of his anxieties about the recognition of his rights, about work and earnings—for the thirty million loan was a sore burden,—about the whole iron trade, since the question of razing the last customs barriers in Germany was already impending, on top of all these troubles there now came, more burdensome to him than any of them, the advance of the Social Democracy. In past years Krupp had not taken the movement tragically ; his fifty years of intimacy with his workers and his long-continued and tireless care for all in his community gave him a clear conscience. But the things he now saw, the inflammatory writings and speeches, the attempted assassinations, the growth of the movement in the Works, the strikes and open threats, all made it impossible in his opinion to look on idly any longer. He sought by word and deed to attach more closely to himself and the Works those of his workmen who were devoted to him ; of those inimical to him he demanded a clean sweep ; " one does not nurse a serpent at one's breast."

This subject now occupied most of his thoughts. He was irritated at the inability of the management to meet at once and to the desired extent his demand that " order " should be restored in the Works ; he did not realize that what was going on was not mere agitation but a social movement which no individual could stay. And now, convinced once more of the weakness of his Prokura, he sought feverishly for the " strong man " who would fearlessly take his place at the head and produce the required " order."

The Hill, 11.2.1877.

KRUPP *to the* PROKURA.

A word to the personnel of my Works.[1]

I send this address to the personnel of my industrial establishments, the Crucible-steel Works, the mines and foundries, confidentially and for the sole information of the community of workers, foremen, and officials in the above private property. . . .

I want every man, even the uneducated, every woman, even a child to be able to understand me, and accordingly I am speaking in simple, plain German.—If a danger threatens, it must not be thoughtlessly despised, nor must one shrink back from it in cowardice ; its origin, nature, and course must be observed with open eyes, and active attention must be given to averting it. It was with a similar purpose that I sent you my last address, warning you to live together in peace and harmony in spite of all differences of faith—not, I think, without effect. . . . This time we are concerned with the so-called Social Democracy. In its moderate form and within its mildest limits its representatives want everyone to be entitled and bound to work under a common law and a supreme administration. There is to be an end of ownership and private disposition. Let us assume that the Social Democracy came into power among us in Germany in its mildest form—without fighting and without resistance (for all that it is entirely impossible seriously to conceive of this happening). Let us assume that I too withdrew voluntarily from my possessions and gave free rein to others.—Of the heads of the management and the really instructed and competent there would be hardly one who would submit to the new control. In place of experience,—which alone is in a position to assure the existence of the Works and bring them safely through the dangers of a difficult time through able leadership in manufacture and trading—men with knowledge and capacity of unproved and doubtful quality would soon bring the great complex to its downfall. Surely everyone will admit this at once. But even assuming that men were found who were in a position to carry on the Works, and to produce the fine work for which we have been known hitherto, at the same price, and stand against our powerful competitors, the Works would still be bound to go under and give no further maintenance to anyone who is unable to digest stone and iron. For it is well enough known that the Works cannot exist on home orders alone.

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[1] First draft of the "Address" which has several times been published. In passing it to the firm Krupp wrote : "I do not want to say less, but to do all that is possible to put what is said more plainly. I do not want the style furbished up, but perhaps made clearer and where possible the sentences shorter. It is necessary that my familiar unadorned speech should be recognized ; otherwise it will be said that it is not my work—but that of a literary man.

"If anything more seems useful, please add.

"I want it printed as quickly as possible, and shall be glad, therefore, if Herr Goose will get together the other gentlemen suggested to consider the draft, and also for my son and Herr Pieper to be present."

The bulk of the production goes to foreign countries, all over the world. The Works owe this exceptional position to their old reputation, to the trust which the management has unceasingly earned since the Works have existed. Without this trust, which is bound up with individual persons, the whole of our trade would be lost. No State and no Government will regard and respect the establishment as its old self even if nothing more is changed than the directing staff; while the character of the Social Democracy will inspire only mistrust and aversion. The advocates of the new doctrine for the happiness of peoples will not, however, rest content with this simple introduction to revolution, they will go step by step further. They have no intention of recognizing or allowing to exist throne or government or religion, property or inheritance, discipline or shame or morality. The good things that have been created and ennobled and sanctified in the course of centuries are to be destroyed, and it goes without saying that that is not going to happen without fire and sword. The honourable savings made by an industrious family in a generation are to be at the disposal of the lazy and dissolute, and when he has consumed his share he will share over again with those who in the meantime have gained a little once more through industry and thrift.

This is in plain words the goal for which these extravagant propagandists of the new doctrine are striving. The violent ones among them want to have the French Commune set up here. Once, however, they succeeded in overthrowing all existing conditions and dispensations, these apostles would only begin fighting among themselves for dominance, which, indeed, is the secret aim of all of them ; they are fighting now in unison for the common purpose, but that is at the back of their minds. The greater their eagerness to bring the triumph of their new laws, the less intention has any one of them of observing them himself. What they are after is to make use of the misguided masses as the soldiers in their battles and to sacrifice them to their own self-seeking. . . . The majority of the population have too high a culture and sense of justice to follow such deceivers for long, once they recognize what they are after ; this majority will also gradually see that a revolution of this sort would come to grief against the solidity of all existing conditions and dispensations, against the discernment and the power of Chambers and Governments, against the capacity of the State to defend itself and to punish the guilty. This vivid picture is no exaggeration. A mad passion for overthrowing everything can have the consequences described, for their like has been seen already. The recent atrocities of the Paris Commune, which are being glorified to this day and held up as examples to follow, are still occupying the French criminal courts and the guillotine. . . .

The industrial employer has to be prepared for vicissitudes just as the agriculturist must be. Both often have the expense of sowing and no harvest. The worker, on the other hand, wants his wages for his work without abatement. The Crucible-steel Works have to send their agents to all the ends of the earth, without being deterred by the expense, in order to find employment for the Works, and they are not always successful. Years come in which no profit is made, but none the less the worker receives his wages. Necessarily strength must be gained in good years to live through the bad ones. Unless there are reserve profits men would have to be discharged in bad years. Instead of this, in the worst years, in the trough of depression, the Works were kept going, manufacturing for stock or supplying at a loss, simply to keep the workers fed and their hearths warm.—The doctrine of the Socialists is also in conflict with the sense of justice inborn in every man ; as every man defends his property, so do I.—If my thoughts are my own, so is my experience and its fruit.—The same is true of the Crucible-steel Works and their production. It was I who introduced the inventions and new methods of production, not the workers. The workman's claim is settled with his wage, and whether I win or lose by it is my affair.

. . . .

The present distress is mainly due to enterprise having been carried too far in past years, to a general miscalculation. The workman, however, has only gained from this, and if he has not saved enough to help him over the bad time, it is because he irresponsibly squandered his high wages, and he has only himself to blame. In the past wages were much lower, but the men were contented and modest.

I have had the spirit to build dwellings to improve the situation of the workers, and already they house 20,000 souls ; I have founded schools and taken steps to enable all necessaries to be got cheaply. This has left me with a burden of debt which must be paid off. In order that this may be done, everyone must do his duty in peace and harmony and in accordance with our Regulations.

In the 'seventies we have had the spectacle of miners abandoning their mines in spite of unprecedented wages, and workmen the works, in order to compel the owners to make impossible increases in wages.

That brought no good, and could only be attributed to misguidance by outsiders, who are still continuing to foment unrest—I will remind you how mines were laid idle in order to bring my Works to a stop, and how, at great expense, I averted this disaster from the men by getting coal actually from Saarbrücken. . . .

Enjoy what is apportioned to you. When the work is over, remain in the circle of your family, with the old people, with the wife and children, and think about household matters and education. Let that be your politics ; then you will enjoy happy hours. But spare yourselves the excitement of big questions of national policy. Issues of high policy require more free time and more knowledge of circumstances for their decision than the workman has at command. You are doing your part when you elect persons recommended by trusted committees.

But if you try to seize the helm of legislative control, you will certainly do nothing but harm, Public house politics is, moreover, very expensive ; there are better things to be had at home. England grew great and powerful through industry, her workers formed unions and struck work to extort higher wages, and as a result much of the work has left England for the Continent. This should be a warning. . . .

May what I have said here serve to make everyone clear as to conditions and make plain what he has to expect from activity and endeavour in the service of Socialism. One does not nurse a serpent at the breast ; let anyone who is not wholeheartedly devoted to us, anyone who chafes at our Regulations, hasten to some other spot, for there is no room for him here. It will be one of the provisions of my last will that the management shall always be inspired by goodwill and justice, but that the utmost rigour shall be observed towards those who want to disturb the peace, and if hitherto great forbearance has been shown, let this deceive nobody.

I close with the best wishes for all.

Essen, 18.3.1877.

ALFRED KRUPP *to* FRIEDRICH
ALFRED KRUPP.

The success of the invention of our two friends Narjes and Bender,[1] which beyond doubt will bring high honour to them and be of service to the whole world, is equally certainly equivalent to the loss of my iron mine and foundry property, especially all of it that has been laid out for the Bessemer process and can be replaced by cheaper material and a cheaper process.

What I wrote yesterday morning in anticipation needs immediate discussion. We came through the crash of 1874,

[1] The experiments of these two engineers of Krupp's staff were directed towards producing mild steel from phosphoric ores, by a method resembling the later Thomas (basic) process, but in Martin furnaces.

but a more dangerous one threatens us now. If disaster is inevitable, it is impossible to have knowledge of its approach too early so as to prepare against it as far as possible.

To make sure that there shall be no treachery or leakage of news it would be well, indeed essential, to have the introduction of the method and its success established beyond cavil by persons of trust. It is also quite right to have the application for patent prepared without loss of time, with drawing and specification ; but nothing must become public until the various questions have been examined, whether we can still use the Bessemer process at a profit against competitors who have ample supplies of cheap iron in their country. There are a hundred other questions to discuss, and before we do anything that would betray the secret we must know whether we must try to get rid of our Spanish contract as a fontanel which might bleed us to death, and all the engagements connected with it, such as the shipping line and so on. . . .

We have got to overcome a serious misfortune, to parry a heavy blow, to avert a disaster. I repeat : from what I have heard, even where patents are granted it will be impossible to enforce respect for them. The law cases would ruin us. In most cases a patent is granted because one pays the fees, but there is no guarantee and one has to fight to defend it. And even when one secures the patent it is impossible, even with an expensive body of inspectors and spies, to prevent anyone from still introducing and working it.

Berlin, 6.4.1877.

MEYER *to* GOOSE.

Unhappily I must agree with the main point in your letter of yesterday ! We are no longer making a profit, and are on the road to ruin ! Herr Krupp refuses to believe it ; he thinks that an *increase* of talent in the administration will quickly secure everything that he understands by " order " ! I warn him every day against illusions of this sort, but quite in vain ! He says to me, with the greatest benevolence, " You will soon see ! "—

Today the Chief has put something together, a socio-political confession of faith, the contents of which Pieper was to communicate to Privy Councillor Scheidtmann ! I was altogether horrified, and told Herr Krupp quite plainly that I would make it my business to fight hard against these views of his in every quarter, even with Scheidtmann ! He took this in very good part and simply said that he would not budge from his opinion !—Perhaps the document will come to you too.

But if you think Herr Krupp has any designs against you, I must tell you " You are mistaken ! " He has not the slightest notion that he is wounding anyone . . .

And all the time he is as sweet as a child ; it is impossible to be angry with him ! I am sorry for him with all my heart, for he is heading for material and moral ruin, if he does not soon mend his ways !

But you must not allow yourself to suppose that he has any ill-feeling against you personally ! He knows very well what you are to him !

Berlin, 6.4.1877.

KRUPP *to* GOOSE AND ERHARDT.

Watch the dates. When you are drafting a placard the known agitators should all have been sent about their business some time before. To post up the placard before the dismissals was a weakness in the eyes of the men, and quite rightly too.—

I am not confusing well-known agitators in the unions and declared recalcitrants with the innocent newspaper readers, if such there be ;—the readers, however, whose minds have been poisoned will be known and must go, without any placard.—

It is wrong to leave declared Social Democrats still at their posts, to talk about their pet subject while they are at their tools, and to interest the others in it. That is what

I wanted to prevent, and there was every reason for caution in paying off. Make sure that you get rid of them in this way.

The placard may be very useful if first you have sent to the devil all the known bad elements, and without it there will still have been opportunities of finding out who are the readers of the free press and men of that ilk, and what they are saying. That will suffice for discharging all who seem dangerous, with no other reason given than that we have no work for them. . . .

On Monday I had no time left to discuss anything and exchange views. I could only mention that I did not agree with such tender methods. I do not want any more long-winded discussions about this matter ; what I have said already covers every contingency, and I shall not budge an inch from my demand. The next time I go through the Works I want to feel at home, and I would rather see the place empty than find some fellow with nothing but hostility in his heart, such as every Social Democrat is.

Essen, 25.8.1877.

KRUPP *to* ERHARDT.

Before the Kaiser comes I want to know approximately what the armoured gun[1] costs completed for dispatch, ready with spare parts, and also a second gun ; what does the first specimen actually cost us ? . . .

I should be glad to have this material for the report (*audience*) to the Kaiser. . . .

According to the latest information I shall perhaps say at once to the gentlemen or to the Kaiser how much a thing of this sort costs, when I have finished showing its value on account of its safety and the saving of men and guns and losses, and when they are satisfied that such a gun will destroy a whole battery, with every soul, without itself being damaged. Prepared in this way, we may do a good stroke there and then. Whether we have finished the trials or not, we can accept any order, even if we find from the trials that the connexion must be made stronger. We have the means for that.

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[1] The armoured gun which was to be shewn to the Kaiser during his visit on the anniversary of Sedan.

Will the gentlemen please turn this over in their minds, so that I may be prepared.

Essen, 5.11.1877.

Krupp *to* Goose.

We will invite all the foreign officers to the Works, so that next Friday there will be a big show, with lunch in the Garden House, which must be ready by then or even earlier. . . .

You can imagine how I am on thorns as to the result and what the visitors will say, for I have long felt that success in this will be the first and surest means of getting all our hammers and the whole Works fully occupied.[1]

At first no one believed in it, but month by month nearly everyone's confidence has taken stronger and stronger root, except where there is hostility which has nothing to do with the purpose and the project.—

It was a pleasure to see, on the contrary, how enthusiastically they all went at the heavy work at Bredelar and how interested they were in the project.—

It was amusing to watch the hesitation to go behind the armour. Those, however, who went with me were able to convince themselves that the shooting is noticed less than in the casemate 100 paces away.

The threat made that the police would not allow it and that no one would fire against the armour if I was behind it, did not materialize. Thus I had no occasion to send anyone away on account of recalcitrance ; nor did I notice lack of courage among any of our people. Nowhere is one more secure than actually behind the armour, and when on Wednesday we fire a rain of shell against it, no one within should have as much as a finger hurt.—

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[1] This was the first public trial before experts of the armoured gun. Krupp's optimism misled him ; the invention never produced an order.

All this I said in advance, and in view of my conviction no courage was really necessary, while the layman who has not seen for himself and has no knowledge may look on it as a mad folly. This is the second main purpose of the armour, and such security for the crew will soon bring patrons. If our material is good, all prejudices existing even in the highest places should be scattered on Wednesday and Thursday. Moltke shook his head because sighting would be impossible. Voigts-Rhetz contended that no human being would be able to stay inside the armoured compartment because of the tremendous noise of the discharge. All those who are now coming have learnt from their schooldays that there is no stopping the recoil. It has even been suggested that sheep or goats should be put inside during the shooting. If they could also serve the guns, I should have no objection.

Unfortunately complete success is impossible, since we have not a suitable gun with a copper obturating ring and the mounting is still very incomplete. . . .

Essen, 7.7.1878.

KRUPP *to the* PROKURA.

We need another school building. I am very interested in the question, also in situation, adequate space for playground—and ground floor rooms exclusively. Hope to see plan and estimate of cost in due course.—

That is a new costly outlay. Should we not, decently, make capital out of it against the Soc. Democrats, who ignore everything that is done for the workers or at least try to explain it away as egoism.—Perhaps a description of the development of the district, which formerly was empty and deserted and now supports so many people in decent conditions.

But drive out all who have not a completely clean record ; get rid in good time of every doubtful man, without considering his capacity and so-called indispensability. An evilly-disposed man who is kept on because of his capacity feels his superiority and is more dangerous through his influence than a hundred who merely go with the stream. . . .

Teplitz, 5.8.1878.

KRUPP *to* HAEDENKAMP.[1]

If, as I expect, the armoured gun comes into very extensive use, it is quite certain that it will not remain as we originally projected it. Armour and gun, apparatus and everything about it will be altered and improved, and in a hundred years' time people will point out how many mistakes were made at first. That must not prevent us from going ahead with courage, retaining what is good and making improvements where we can, ourselves seeing to our child's development and not leaving it to other teachers.—I am not to be discouraged by the few enquiries concerning the armoured gun ; its mother, the crucible-steel gun, was treated with contempt for 25 years.—I think we shall win through with the armoured gun sooner than people suppose. The only thing needed is for everyone concerned to keep up his courage and his spirits.—

I think just the same way about the new naval gun.[2] Yesterday I told the Grand Duke of Baden about the object and purpose of both, and pointed out to him how extravagant the cast-iron armoured turrets in Metz and elsewhere are.—He too welcomed the naval gun, and considered that the Kaiser would welcome the purpose of the invention after the disaster to the *Kurfürst.*[3] He will soon have talked to the Kaiser about both matters, and already hopes that the Kaiser will command me to place them before him. It is a pleasure to me to be able to say this to the gentlemen who so truly share my interests. I also gave the Grand Duke a special statement of the purpose and value of the naval gun, and enclose a copy. I should recommend the broadcasting at every opportunity of similar explanations in word and picture, only if possible more clearly and better expressed, and faith in the good cause and work for it, before the big silly public will be able to understand it.

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[1] One of Krupp's engineers.—Translator.

[2] The pivot gun invented by Krupp, which was in his opinion calculated to revolutionize naval warfare. The invention came, unfortunately, too soon to win recognition.

[3] The sinking of the German armoured ship *Grosser Kurfürst* on 31st May, 1878, in the Channel, off Folkestone.

Frankfurt, 17.9.1878.

KRUPP *to the* PROKURA.

Mr. Longsdon asked me about the Russian matter.[1] I told him that it must remain as I have already said. There would be no point in a journey thither, as all that could happen would be that we cannot agree to it. Thus the most that would be gained would be a couple of months' uncertainty. There could be no purpose served by going, since if we were pressed for a statement, after an inspection we should only have to refuse so much the more decidedly.—I repeat that it would not disturb me if someone else goes there. If he has anything to lose, he will lose it, and certainly his freedom.

I have stated before that I should be prepared myself to go as soon as the world situation was such as to make the matter worth considering. That gains us a year, and more than that we cannot get.—

(*Entre nous*, the world situation may be what it will, but we have nothing, not a man nor freedom nor experience, to waste in Russia.)

It is very plausible and must be recognized to be sound if we say that the prospects of European peace seem too insecure for it to be possible to think of enterprises abroad, and that, moreover, we need all our attention and our exclusive energies for our own Works, and that accordingly we cannot consider the question until European peace and the general situation in trade and communications are such as to encourage further enterprises abroad.

If this declaration has not yet been made, please see that it reaches the representatives in time to dispose of Hallbauer's[1] letter ; he treats the matter as lightly as though it was simply a good contract for supplies.—People forget to think how one may mortgage property, freedom, and honour.

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[1] The visit of Wachter, Krupp's representative in Petersburg, had reawakened interest in the question of a branch Krupp establishment in Russia, which both the Tsar and the Russian War Ministry still wanted.

Essen, 17.12.1878.

Footnote by Alfred Krupp *on a letter from* Carl Meyer,[2] *dated* Berlin, 15.12.1878.

Thanks to my experience of something like forty years past, there is nothing in the above news to surprise me. It is a matter for just scorn. I have already said most of what there is to recall of a technical nature, and here is the rest, perhaps with a few repetitions. I am firmly convinced that whenever we civilians have the assurance to think of interfering in military and naval matters, we shall always meet with the customary opposition, and that every officer, or any person making proposals in association with officers, will receive preferential treatment. It does not matter how mad the scheme may be. *Entre nous*, the Kaiser himself is so full of the subject that he himself gives me instances of it at every opportunity ; he did so lately in Wiesbaden. General Hahn, Inspector-General of Ordnance, would have nothing to do with crucible-steel guns, because the old bronze guns had proved their superiority at Waterloo ; the Minister von Boyen returned my first crucible-steel musket barrels, finished with my own hands, without looking at them, with the remark that " the Prussian small-arm (the old musket with flintlock) is so perfect that it has no need of improvement."[3] Later, in 1849, the Testing Committee declared that the crucible-steel gun tested had given proof of an excellent and surprising efficiency, but there was doubt as to its efficiency on a wholesale scale, and the case was only to be noted as of scientific interest. The navy was on the point of introducing the English muzzle-loader and only the Kaiser prevented it. Roon, the Minister of War, wanted to reintroduce the bronze gun, and the Kaiser prevented it. Opposition was put up to the new field-gun, and it was the Kaiser who secured its introduction. Inspector-General Podbielski had declared to the Kaiser that an increased muzzle velocity was a matter of no importance, and the Kaiser made him confess that he had spoken nonsense.—All the military authorities and the Testing Committee have always been against me. I shall come out on top in spite of them all, as in the past.

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[1] Hallbauer was sometimes sent by Krupp to Russia on special business.

[2] Meyer's letter ran : " I have just learnt from a reliable source that Schumann's armour plans are now before the Artillery Testing Committee, and are meeting with great approval not only from this authority, but also from the Civil Engineering Committee. It appears that Major Trautmann is also active in this matter." Major Trautmann had resigned after a short period with the firm of Krupp.

[3] The Minister actually said no more than that the Prussian infantry musket met all reasonable demands.

With the Anti-Socialist law, and the entry of several brilliant men into the Prokura, the year 1879 saw the fulfilment of much of what Krupp had been wanting. He looked forward with more confidence to the future, and the economic conditions, which seemed so dark and threatening to all the rest now that the last of the iron duties had been taken off, disturbed him less. He had always come safely through difficult times by dint of hard work and tenacity. He considered that foreign competition could much more easily be met by industrious work and efficient control than by cartels and customs duties. But in human weaknesses and errors and wrong ideas he saw a threat to the foundations alike of human society and of his own creation. He breathed again, and, throwing off political cares and the anxiety about " order " in his Works, gave himself up with redoubled satisfaction to his last personal work, by means of which he hoped once more, as in the past with the seamless tyres and then with the crucible-steel gun, to initiate a new era of State contracts and confidence in his productions. These were the armoured guns behind great forged iron shields, the pivot gun for modern gunboats, with which he proposed to do battle against the heavy armoured ship, and finally the floating, unsinkable battery, for protecting ports, estuaries, and so on against any attack. But his experiences were now too deeply rooted in the past, his ideas no longer carried conviction as formerly, and he failed to secure the success to which he had been accustomed. Even the great success of the demonstration at Meppen in August 1879, which excited artillery circles all over the world, failed to bring recognition for the armoured gun. He did not even carry his colleagues with him ; they were moving along other lines and gave only unwilling consideration to his views and desires. He felt this himself, but was unable to tear himself from his ideas, and passed his last years in an exciting but fruitless struggle over inventions of which some had already been put out of date by other successful innovations ; some were premature growths in a soil not yet prepared for them.

The Hill, 15.1.1879.

KRUPP *to* C. UHLENHAUT.[1]

. . . To-day I come to the so-called " restoration " of the material through raising to a red heat and cooling down in oil. Forty-five years ago (and even earlier), when I was myself forging, turning and hardening rollers and rings, I experimented and introduced a preliminary mild hardening in oil first for rings, and later for rollers. I was aiming in this at a gradual transition to the considerable tension produced on the surface and consequently on the inner core by the hardening, I introduced the process before anyone now in the Works had any knowledge of steel. But the application of the process to unhardened objects for the production of increased tenacity was discovered elsewhere. I am never able to understand how this cooling in oil can have any influence on the inside of thick bodies or how any essential difference can exist between oil and hot water (or steam), if the cooling takes place gradually in the same time. If one smears a boot with train oil it is easy to understand its increased pliability, but the oil does not penetrate steel as it does leather.—As it is a very complicated operation and also very expensive, and dangerous as the size increases, it might be worth while to find out whether a substitute cannot be discovered—perhaps by introducing a current of steam into the compartment in which the glowing body lies in a condition in which no water can stand on it.—It would be easier to do this six times with steam than twice with oil. It may be that you have already tried steam currents. . . .

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[1] One of the firm's engineers.

17.2.1879.

KRUPP *to the* GUN DEPARTMENT.

When critics, conscious of their own dignity—which, however, is often only a matter of office and title—want to give us laymen, who can know nothing of their subject, a cavalier dismissal and even find that that may after all be their best argument, then, prepared as we are to be so treated at any time, we must not be content to accept that, but fire our proofs, blow after blow, into their skulls.—We have now reached the same point with our navy and the Engineers at which I always arrived in the past with every other authority and establishment when I wanted to introduce anything new. Here are a few more considerations :

The navy wants naval battles (because it was so in the past). We want to avoid them, and without them, without sending our treasures in ships and men to certain destruction, to have the enemy fleets annihilated by the small ships,[1] as the dachshund destroys the stag, the wolf the ox, and the weasel the turkeycock.

No armoured ship can stand heavy guns in the long run ; if big ships are fighting together one may sink before the other, but the other is lost as well in all probability.

Assume that two or three small ships accompany one or more big ones ; they may proceed in their rear, since they are not armoured, but at the proper moment they steam ahead, circle round the enemy ships at full speed, and fire on them as rapidly as they can load.—With their great speed and their movements about a centre their aim is facilitated —the enemy ship is large and lies in the centre, while the small one is scarcely visible and is difficult to reach by sighting owing to its speed. The big ship is in ten times more danger, and if the small one is actually hit and sunk, the loss in material and in human lives is only one tenth as much. . . .

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[1] Krupp was agitating for the pivot gun boat, armed with a single heavy quick-firing gun.

Berlin, 18.2.1879.

General von Stosch *to*
Alfred Krupp.

My dear Sir,

I return herewith the letter of your London representative which was very kindly transmitted to me on the 13th inst. I wish you from my heart success in your labours. Only I must demur to the comparison which you make between your work in regard to the rifle and the gun and the ideas which you suggest. . . . I cannot admit your right to treat an idea as equivalent to the product of long and thorough work, and to say : " Since the product of my labours was so splendid and so fruitful, an idea which I may pass on for working out is also a thing with life in it." I was surprised to find that said by a man who himself said to me when a steel armour plate was under discussion : " It is of no use ; I never bring anything forward until I have subjected it to thorough test and have satisfied myself about it ; I have tested that and it is of no use." . . . An old practical man is bound to put practical tests far above theoretical studies. Instead, you go home and write to me : " The removal of weaknesses and defects in the ship must be left to the constructors, and so on. That has been my method with every new thing that I have introduced in my 52 years of practical work, with everything that has brought the Works to greatness. My first crucible-steel rifle, my gun," and so on. When those were being worked out did you then say " Here is my idea, now go and make the thing " ? God forbid ! You tried employing your metal in perfectly definite directions, and that is how you rose to greatness.—In the present instance you have entirely departed from the method which up to now made your success so certain. You have fixed your gun in its position on land and have as yet had no enduring results, and you are demanding that an untried method of securing shall be accepted at once on board ship.—That is more than your 52 years of practical work justifies.

Do not take it ill when I say this so candidly to you ; I am guided only by the desire to serve you, and have no other interest.—You know that the German navy is too poor for experimenting. England is richer, but I cannot recall an instance of her accepting projects submitted without any investigation. Please let me still enjoy your old goodwill in spite of my openness.

Essen, 26.2.1879.

KRUPP *to* VON STOSCH.

Your Excellency,

You have said plainly in your esteemed private letter of the 18th inst. that variance in views or convictions expressed should not affect mutual regard. This goes without saying for me, and I will therefore proceed on that basis. Our desire to create useful things and always to make the first offer of them to the State is our only reason for this private and personal approach, which would cease the moment it were to weary Your Excellency ; on the other hand, permission to correspond with the head of the technical department is of great value and very instructive to us in determining how to proceed. . . .

As regards the pivot-ship, the question of the solidity of the pivot, bed, and gun has been solved by experiment ; the further experiments needed to determine the effect on the ship, the recoil and the oscillation produced, will shortly be carried out. Pressure of gas on the ship's deck will, as I have already mentioned, be eliminated. The result of the experiments to be carried out can thus, as I remarked at the same time, only affect the design of the ship. . . .

For all that, the naval pivot gun, which a year ago was, it is quite true, no more than a suggestion thrown out by a layman, has since been examined and discussed to such good purpose that already firm orders have been promised. I will give further particulars as soon as the negotiations begun have produced a definite result. Meanwhile, experiments to determine further requirements regarding shape of hull and internal connexion are being carried on with reference to shock, rolling, and pitching. As with all other human productions, there will never be an end to improvements and changes introduced ;—if only on account of the varied demands to be met. . . . My hopes and endeavours are directed solely to obtaining ample fresh work and bread for the great army of my workers, whose future fills my days and nights with heavy care, and only for this reason do I myself work unceasingly at everything which may assist progress ; for the goal can only be attained by constantly thinking ahead. . . .

And now I do beg your forgiveness for having written at such length, and beg still more for your continued goodwill.

Vienna, 22.5.1879.

REPORT *on* CONVERSATION *with* AUSTRIAN NAVAL AND GUNNERY EXPERTS.

A FEW REMARKS.

An Inspector of the Navy wants to talk to me about the pivot boat—today is a holiday—the Admiral will not be here till tomorrow—otherwise I could leave today. Baron Salis is in Switzerland.

The War Minister, whom I invited again yesterday, was very kind, and said that he would order Major Count Geldern and Captain Bechki to go to Essen[1] ; probably no one else will come. Colonel Schmarda, who is always most kind, would gladly have come, but cannot get away ; they are all overburdened with Bosnia.

It would be useful if the Austrians and Italians could be shewn field guns of such efficiency that they would carry home with them the conviction that they can do nothing against them with their bronze. . . .

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[1] This was for the big firing trials planned to take place in Essen—they were carried out in the form of the so-called " Bombardment of the Nations." Count Geldern had been present inside the armour on the occasion of the firing on Krupp's armoured gun in July, 1878, and had reported on the event in the organ of the Viennese Military Science Association.

Major Count Geldern, who rather fancies himself as a judge of armour, and had his own ideas and proposals some time ago, told me that he thoroughly agrees with the present design. All he would like would be to have proof given at the trials of the capacity for quick firing. In his opinion the enemy would wait his opportunity to fire when the shutter was opened. It must be possible, he considered, to close it quickly the moment the flash of the enemy's gun is seen. I imagine that this is possible, for the enemy who came with a gun within a couple of thousand paces of the armoured gun would be blown to pieces at once. Thus, in order to shoot, he must remain farther off.

I told Count Geldern that this is probably unnecessary, for our screen is always closed, and only dropped at the moment of firing. We must achieve this precision by arranging that it shall be impossible to fire at all until the slide is down (for otherwise there would be a disaster).

With the armoured gun, however, we have the great advantage that so soon as we have our range we can surround the gun with smoke, and if that produced by shooting is inadequate further smoke can be produced on a movable carriage, which can be shifted about to mislead the enemy. The gun can also be concealed in other ways, so that the enemy can neither see it nor the flash from firing. . . .

The Hill, 15.9.1879.

KRUPP *to the* PROKURA.

We can charge no one with injustice to us, even if the Italian navy actually turns again to Armstrong[1] and the British Government tries to do without us.

We have invited people and they have come[2]—without conditions. Thus we can, at the worst, only be disappointed in our expectations. No promise has been made to us.—As you saw, I told Longsdon how Mattei and Brin, as was clearly in their interest, since they originally favoured the big ships and the Armstrong guns, are sticking up for their system.

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[1] Armstrong's had a contract for the supply of the larger calibre guns for the Italian navy.

[2] To the "Bombardment of the Nations," which had been witnessed by artillerists from all countries except France.

Both were strong opponents of the pivot ship—because they are afraid of it, and may well hate us accordingly.—

I do not think that this is the view of the Italian gunnery men. Haass will soon know about that.—

We need to know how much truth there is in the newspaper's statements regarding design and efficiency of the Armstrong gun.—

When Herr Gross is back, it is to be hoped that he will soon produce really striking evidence of the superiority of the crucible-steel guns of our make. Even though the English untiringly obtain the same firing efficiency with the same length and calibre and the same powder, there is still the difference in the material. Iron requires so much more bulk and weight, so that for the same weight I can produce a crucible-steel gun of greater calibre and greater efficiency. Herr Gross can make that clear.—

Then the Armstrong breech mechanism has no long record of good service to its credit as mine has. . . .

The Hill, 16.10.1879.

KRUPP *to the* PROKURA.

The question must be gone into whether the system of the Education Minister[1] will have an influence on our schools, and whether we may be disturbed in our work and our intention of introducing the common school as generally as possible.—A system which has already been recognized to be advantageous is, it seems, to be thrown over by a new current of interests. There is nothing more behind it all than the anxiety of the clerics on either side to increase their power over people's minds, even though harmonious relations among the people are injuriously affected. I hope we shall oppose this with all our strength, and that our conviction will freely be expressed, even to the Minister's face if he comes to Essen. I may go to Düsseldorf too, to say the same to the *Regierungspräsident.* I should gladly have made no matter what sacrifice for a school in which children of all creeds get used to one another at an early age, get to know one another, play (and quarrel) together. I should have been glad to see us working more energetically for the general introduction of these common schools ; incidentally, a rise or fall in the numbers belonging to one or another of the various creeds would cause less difficulty in equalizing places.—Anything we do, or even have to do, for the separate school will meet, so far as I am concerned, with nothing but the strongest opposition, and I am sorry for the future if the powers that be win.—It is simply a scheme of clerical ambition and its tools.—

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[1] Ritter von Puttkammer was appointed Minister by Bismarck in 1879 in place of Falk, to bring to an end the *Kulturkampf* (the conflict of creeds in Germany).

It would be for the good of the State and for the good of the individual that men who in their riper years will have to work and act together, whether as journeymen, miners, factory workers, domestics, clerks, or soldiers (in all classes of society, from the lowest to the highest), should not come together with prejudice and a hatred already produced by segregation, but with the impressions gained from a school in which they have made acquaintances among and struck up friendships with decent, jolly youngsters of the other creeds. Those who have grown up in this way are safe from doubts and prejudices—they all know one another and know one another's good points.—It is just the same with isolation of the schools as with that of nations and men.—The isolated country hates all foreigners. The German who has never been abroad is prejudiced against every other nation, and similarly in the other countries.—This distaste and hatred diminish in proportion as one gets acquainted with foreign countries and their people and make acquaintances and friends among them. Everyone can quote instances ; I have had them in my own experience. For instance, I hated Englishmen till I went to the country and there found such good, genuine men and women. All that is needed is to get to know one another.—And to prevent this the new Minister now wants to put up a Chinese wall between the two creeds and keep the children away from one another. That is an evil beginning, and I hope there will still be found enough insight in the country and enough defenders of the cause to scotch it. . . .

Essen, 16.1.1880.

KRUPP *to the* GERMAN CROWN PRINCE.[1]

Your Imperial and Royal Highness,

In the solitude of the countryside, chained to my house and my desk by the weather, with the portrait of Your Imperial Highness in front of me early and late—at last the impulse has been so irresistible to give some sign of life and of the deepest reverence, that I am setting aside my concern lest I should be troublesome.—I am not counting on any answer whatever ! Am only desirous of giving expression to considerations and aspirations which the times are producing. Above all, my family and I hope most sincerely that Your Imperial Highness and the whole exalted house may experience a truly blessed year.—According to reports Your Highness is proposing shortly to go to Italy. I hope that you will have pleasant days there in the intimacy of your family circle, and all return soon to the dear fatherland, strengthened and refreshed after the troubles and pains passed through.—

Great activity is developing in this country in coal mining and the iron industry. I am only afraid that this new life may not be of long duration. All the works that have been closed down are being started again, and as there are too many works for the permanent demand there will soon be fresh over-production to interfere with prosperity and give the firms the finishing stroke.

Since 1874 probably the majority of the industrialists (in coal and iron) have lost half their capital. My establishment has had the good fortune to be fully engaged, and the troubles that have come to the industry generally have thus been kept at a distance from here. During the war in the Far East Russia gave us important orders. . . .

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[1] Later Kaiser Friedrich III.—Translator.

Negotiations are in progress with Italy in regard to armoured mountain guns.[1] These will make it impossible for the enemy to get past in any direction. The design has been so perfected that even if a number of hits should dangerously injure one place, another piece can be substituted, which is kept ready for the endangered places.—I always make the first offer and communication, naturally, to the authorities of my own country. Usually, however, my proposals have just been pigeonholed, and the first orders have come from abroad.—I am not saying this by way of complaint, but of explanation, and I gratefully recognize the very ready consideration given to me by the Admiralty under General von Stosch.—The General does not yet approve of my new system for a ship with pivot gun, and has given me some very frank expressions of opinion about it. This, however, is to me rather evidence of coming over, and much better for me than the refusal of any sort of examination. But I shall not give in to my last hour. This ship must rule the seas in the future —just as the armoured guns will protect coasts, estuaries, fortresses, and passes from attack. What we have is not enough.

Looking back on promises fulfilled although they had not been credited when made, I no longer have any fear of being charged with blowing my own trumpet, and am therefore giving candid expression to my conviction—here—where I feel this to be my duty. I want to find a great deal of work—bread—for my people, and could find room for another 3,000 men ; it is for that reason that I am working to obtain acceptance for my idea, and not from ambition or desire of gain.

With this I will close. In deepest reverence, Your Imperial and Royal Highness's immutably loyal servant. . . .

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[1] These negotiations, too, remained without result after the trial firings at Vinadio in 1881.

Homburg, 12th June, 1880.

KRUPP *to* LONGSDON.[1]

I arrived here to day not yet better than at the time when I left home, which is particularly due to that incident with Jodtincture.[2] I am here only to enjoy air and hope that this besides rest, will enable me to go the 18th inst. to Ems to meet the Emperor there on the 19th. Meanwhile I hope, that you will see him the 18th at D'dorf.

I am organically well and only much tired. I have been obliged to write more than suitable to my state of health. I should not wish to have any occupation with serious questions and hope, that for all, which regards technical question you will get ready without my intermission—just as it will be the case in future.—

I am sorry that I probably not shall see you before your return to England, if you can't come to Ems after the Emperors visit of the exhibition. Only for the sake of seeing your dear face I should wish it—not for businessmatters ; but at the same time it is my great desire to see you in England, when I shall become well enough to have the courage to go thence[3] ; particularly when a businessquestion might render the journey useful. The visit of Prince Charles[4] is less important than that of the Emperor and requires less any representation, because he appretiates an old pot[5] higher than a monstrepiece, and therefore I wrote to Mr. Jencke, that Gross can do the whole of the explanation and that very little will be required. He will scarcely go into the pavillon and be glad, if he has done his duty of looking at the experiment with the large gun. Therefore Richter and Uhlenhaut will be more useful in the works than in D'dorf—for his sake —but I desire them there when the Emperor comes.—As for yourself it is only depending on your time. If you could be there for that hour, where[6] the experiment will be done, it may be very useful on account of the impression on yourself and on your conviction in comparison with the present English system and of course what ever pleases you will be the very best. I don't expect answer, because reading is not my power,[1] where as writing fatigues me less, because I don't want to look at it. I am quite alone at the moment—Mr. Cramer[2] is to the concert, on my demand, and I can't spend my time more agreeably than by occupying me with yourself. I am afraid that I used much more lines than necessary for saying so few things, but I can't help it when once the pen~~s~~cil wants to run.—

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[1] Written in English by Krupp.

[2] i.e., tincture of iodine.

[3] i.e., thither.

[4] To the Düsseldorf Exhibition.

[5] A reference to the armoured turret of the Gruson works, which Krupp used mockingly to describe as "an iron pot."

[6] i.e., when.

Now my dear friend I take leave from you in case of not seeing you before your present return to England. Give my kind greetings to Mrs Longsdon.

In true friendschip always yours

The strengthening of the Prokura, and especially the appointment of the very energetic Jencke as its head, had done something to relieve Krupp of the doubts and anxieties of years past. But fresh trouble came in the latter half of 1880 through a temporary breeze with the German navy—burst inner tubes in some of the older guns and in consequence a demand for a guarantee. He recognized the full gravity of the matter and insisted more than ever on stern control of work and materials, but absolutely rejected the Admiralty's demand. Neither the proof of actual defects nor the submissive attitude of some of his colleagues could disturb his conviction that to agree to the demand was, for technical and commercial reasons alike, out of the question, that it would be the ruin of the establishment. He won the day, and another solution, satisfactory to both parties, was discovered.

His strength in defence was still evident ; but his effort to persuade the world to take up his new inventions, the armoured gun and the pivot ship, failed. Nor did the Italian Government's trials at Vinadio bring him success with his armoured position for mountain forts—he declared that the reason was that his intentions had from the first been misunderstood and misinterpreted.

[1] i.e., forte.

[2] A distant cousin of Frau Bertha Krupp ; he had accompanied Krupp to Homburg.

He saw the hope recede of making his last great invention bear fruit. He was nearing his seventieth year, and perhaps, for all that he would not admit it, he secretly felt for the first time that his strength and his iron will were exhausting themselves over a thankless task.

Essen, 1.9.1880.

ALFRED KRUPP *to* FRIEDRICH ALFRED KRUPP.

Dear Fritz,

I ought not to write because of my headache, but I have been thinking over the question with the Admiralty and the whole of our purchasers, and have become clearer and clearer about it and concealed nothing from myself. I have come to the conclusion that we ought at once to send out a suitable circular, for it would be much worse if a gun belonging to another State were to burst in service on board ship or in a fort than if the Admiralty were to destroy one by continued trials, even after a smaller number of shots. I hope you will go thoroughly into the question ; it is a vital one for the Works, and is a question of saving many millions if we can. I shall try, therefore, to prove, following on my note of yesterday, that we have no reason to fear the Admiralty testing the gun. Stosch has equal reason for not depriving his men of their confidence.

If we avoid the test by giving a guarantee, that is only a palliative, and a costly one, for within a year's time the news may arrive that similar defective guns have burst in other States and disasters have resulted. We must therefore draw general attention to a defect in the design and the attendant conditions, adding that we are in a position to make the needed alterations in the guns of that early design, which has already been abandoned, perfecting them according to the latest approved system.[1] Thus, I would now say to Stosch : " I will repair the guns for you ; let the worst be picked out (even a considerable number) and subjected to continuous firing. If they fail to stand 600 shots, we will agree to the guarantee, reserving the right to amend its form."

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[1] By inserting inner tubes.

If Stosch does not agree and insists on the earlier test, I shall make no further opposition, preferring to let this test be applied rather than let the question of a guarantee be opened up.

Stosch thinks he can place no trust in the repairs and the quality of the whole mass after repair—these guns, he suggests, give evidence of lack of uniformity.—My reply is that we progress from year to year, that he himself must have the proofs of our industry, that in this instance he is passing judgment on deliveries of 10, 12, 15 years ago. Suppose the navy were to be judged on that principle, or he ! What was he 15 years ago in the navy ?—nothing—to-day he imagines himself a shining light.— . . .

The Hill, 21.9.1880.
Early morning.

KRUPP *to* JENCKE.

From the standpoint of the authorities the effort to obtain a guarantee is, of course, concerned with a very desirable thing, and the attempt to make use of the pretext available to get it is very shrewd, very pretty, and very plausibly made and argued, and in the interest of the State ; from our point of view it is inexcusable except on the last ground.—I have been thinking further of the matter through the night, and am more and more certain that we must not on any account put our heads into that noose.—

The full statement made in the last letter to the Admiralty should satisfy every impartial person that there can be no question of any blame—and consequently none of any penalty, to say nothing of one with such incalculable consequences as is suggested.—My reply to every contention of the authorities, the moment they are not satisfied with our proposed statement and the offer made, is simply to insist on our legal defence of our own interests, and I shall demonstrate to them that they cannot demand so much as has been offered to them and that they owe thanks for everything done beyond what they are entitled to.

We must accept no liability after the event in regard to a contract fulfilled long ago, and should have repudiated any such liability at any time ; and I am more and more convinced that, if we cannot defend ourselves on the present occasion against this imposition, we shall be unable in future to refuse to give a guarantee also to other States. . . .

That would have to be done at our expense, and would be regarded as a lasting penance, expiation, penalty—involving the admission of a correspondingly grave fault—such as demonstrably does not exist on our side. We have simply had to go through the experience of finding that what at one time is a marvellous achievement in everybody's eyes proves, after the lapse of some period or other, to have the imperfection of everything human in face of the increasing demand made on it. We have not foreseen and assessed in advance such things as time has brought to light.—And if we are now improving the guns to the best of our knowledge, and, indeed, designing and manufacturing entirely new ones, it is altogether probable that in fifteen years' time or so we shall be making better ones still. The Jacquard loom, the marvel of the beginning of the present century, has long since been put in the shade by later achievements. Such cases exist in every branch of human activity.—

The Hill, 9.12.1880.

ALFRED KRUPP *to* FRIEDRICH ALFRED KRUPP *and* JENCKE, ST. PETERSBURG.

It is impossible for me to know whether they will talk to you in Russia about the way some guns become rough sooner than others ; they will soon learn in Russia that we are relining guns for Berlin, and instead of making any secret about it I recommend to your consideration whether not to say at once to our friends that we are providing the guns with a new inner tube and so making them entirely new and giving them more than the original durability. But the scale of charges drafted for Berlin is not enough for me and I should recommend adding twenty-five per cent to it. Even then we shall not gain anything like as much as from making new guns, and the same big plant will have to be employed on a small capital expenditure in material as when new guns are being made. If one recouped one's expenditure three times over on the work of renovating guns, one would not gain in the same period with the same plant as much as on a more moderate calculation of profit on whole guns. . . .

Now I will raise a matter which it might be well to discuss with Herr Wachter : the first question is whether the authorities and the heads are as well inclined towards us as we hope and as we should be entitled to through our loyal service.

Next comes the question whether the Russian works are adequately equipped and whether the authorities do not realize that they will get into difficulties with their slow workers and that they are throwing away millions to no purpose owing to the greater expense in which the Russian establishments involve them. It might be worth while for Herr Wachter to raise with his friends the question whether you could not bring back an order for 4–5 million roubles or so. We know that Barantzov was very dissatisfied with the Russian works ; perhaps the navy will also have changed its views, and obviously they all stand to gain if the contracts which those works have not succeeded in fulfilling are given to us after all for execution within the required time limit.

This may be all very well but impossible. But why should we not have preference before everyone if that is incidentally the way that interest indicates? The Tsar is always well-disposed towards us, and so are Grand Duke Michael and the War Minister. So far as the navy is concerned it is Grand Duke Constantine whose will is law. You will soon find out with Wachter's and our patrons' help whether it seems advisable to take steps to secure an audience from His Majesty the Tsar and the Tsarevitch, and also Grand Duke Constantine. I have been taking advantage of a free hour to write to you at this length, and close to-day, so far as business is concerned, with the hope that we may be on the way to a good time, thanks to big contracts, success and increased profits due to higher valuation of our product. I consider the latter essential, provided that we do such excellent work that no works in the world can equal us.

To make every effort to reach that point and to keep up the standard in future is everyone's most sacred duty. Once we have attained it we can call the tune and ourselves lay down conditions and stipulations, and wipe out for ever the humiliation imposed on us from another quarter.[1]

Now, health and enjoyment to you and Fritz.

Essen, 12 Januar 1881.

ALFRED KRUPP[2] *to* ALFRED
WM. LIGHTBODY, ESQ.,
SEFTON DRIVE, LIVERPOOL.

My dear Friend !

Every news from you and all yours will always be grateful to me to enjoy with you in good events and to take duly my part in bad ones. I haste to send you my best wishes for your dear mother and hope that at this hour she will be entirely recovered. To her to all your brothers and sisters and to your aunt Miss Marianne my kindest greetings.

Thus you live now on another place called Birchfield just the some as the old house of your grand-eldren[3] in Liverpool—at present a barrack—but 41 year ago—when I was young and your father and aunt also the grand-eldren so friendly and alltogether so kind toward me—a mere foreigner—that Birchfield was and will remain in my memory for all times a sacred spot.

. . . .

I received just now your letter of the 8th inst., rather late and I'll answer it directly. Respecting your brother Arthur I will ask my friend Mr. Longsdon in London who is my first and right hand in all technical questions and knows better than I what will best be to recommand to your dear brother and that answer will later follow.

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[1] Krupp had been greatly upset by the German Admiralty's demand for a guarantee.

[2] Written in English by Krupp.

[3] i.e., grandparents.

The Hill, 23/25.2.1881.

KRUPP *to the* PROKURA.

Further with reference to the correspondence with Petersburg.—I have mainly disposed of it already, and will only say a little more in connexion with what I have written, by way of confirmation.—

Suppose there were war between Germany and Russia, which is by no means impossible; evidently I could not carry on the works as Krupp in Russia to make armaments against Germany. For the period of the war we should have to come away and leave everything in the hands of strangers, if we do not want to be regarded as traitors in Germany. We need not bother, indeed, about that, for hatred would quickly hunt us out of the country.—The same would apply if we were merely supervising. We should not be tolerated, but if we had nothing but what we could carry on our backs it would not be so bad, and the possibility of cancellation would have to be envisaged in the contract, or provision made for compensation.

If they get over all their doubts in Petersburg and place these works in the hands of a French company, Schneider will profit indirectly through the introduction into France of things which he will learn there at no expense to himself, and so he will be able to compete with us in future in all the ends of the earth; but even bearing this in mind, I should not in the end regret having abandoned it all. . . .

If Russia's internal affairs develop peacefully and if in her foreign relations she remains at peace with Germany, if the works were given sole rights of supply at least for some long period by the military and naval authorities, and competition thus made impossible (with assurances on either side against pressure on prices and against unfair dealing by putting them up), then those works could be carried on with the same energy and in the same spirit as our own, could develop to colossal importance and yield big profit. I only want to say this in order not to underrate the importance of the offer. That would be the bright side. But against that I put the other eventualities mentioned—

revolt within the country, war with Germany, intrigues and pressure from caprice or interested motives. Any one of us may be driven out of the country as undesirable, or all the lot of us, or lose our freedom and property.

It is not a country in which trust and faith in men and conditions would be justified.—The prospect of the hugest profit must not influence us if we are not protected from the foregoing. One or two millions at the least would be risked, together with the welfare of families, if the business were at any time to come to grief. I have mentioned some of the things which might bring that.—I should not care to risk anything at all, even if the other aspect of the matter offered the likelihood of a profit in ten years of 20 million roubles.

Essen, 31.3.1881.

KRUPP *to the* FIRM.

With reference to the *guarantee question* raised by the Admiralty and the War Ministry in Berlin, I must say a few words to prevent a possible misunderstanding arising from past correspondence on the matter with the Procura.—

I have held firmly from the outset to the conviction that we should never have anything to do with any sort of guarantee for guns, for we should then be on the road to destruction, at the mercy of eventualities and of chicanery of every sort—and that it would be better for us to make no more guns rather than that. The panic spread by Berlin[1] resulted in my being asked to agree to some mild form of guarantee in the event of the Procura finding it impossible to attain tolerable relations with the authorities without some compromise.—As the Procura will have to carry on the administration after me (without me) to the best of its judgment and capacity, I gave my assent to that—so that there should be no ground for charging me with unreasonable obstinacy, but at the same time with the utmost reluctance.[2]—Meanwhile negotiations by letter and interview have produced calmer views and have established, on

[1] By Meyer.

[2] See letter of 1.9.1880, to F. A. Krupp.

the grounds mentioned, that no sort of guarantee can ever be given beyond this rather important moral one, that in their own interest and for their own honour the Works will continue as in the past to exert themselves to the utmost at all times to carry their productions to the highest possible state of perfection. . . .

I desire, therefore, hereby to annul for all time, so long as attention continues to be paid to my wishes, my former authorization of a guarantee of any sort, and desire, accordingly, that that letter may now be marked as cancelled or attached to this letter—in order that that assent may not by any chance fall into the hands of persons unacquainted with the change in the situation and so lead to error.

I write this now in view of the chances of life and death.

Venice, 8/9.5.1881.

KRUPP *to* BUDDE,[1] ESSEN.

So the Rosset system is a mutilation of our patented system.[2] The shield in two halves, merely drawn together by the ring, may be a sufficiently good fit (according to the finish). But a hard hit on the shield will stretch the ring, if it does not destroy the shield. The firm may have agreed to anything whatever in regard to secrecy, and may as yet have made no objection to Rosset brazenly calling the system his own ; truth and justice must prevail, and you need have no compunction about saying straight out to Rosset—but with frightful politeness—that the whole thing is incompatible with our conviction of the needed solidity. But do not get heated, as I no doubt should to the point of being offensive.—After this it seems to me that we have no alternative to a breach with Rosset, for we are not going to let the system be exposed to the contempt of the whole world to please him. The scheme is ridiculous in comparison with ours, which offered Italy such solid designs. If only soft cast-iron shots are used, our system, which was tendered for, will hold against a long campaign, for the shots (which were not case-hardened) made no impression even on wrought iron. For the rest, I will have nothing to do directly with the swindle ; I have no wish to quarrel with anyone. The Procura know my view, and will themselves give you intructions how to treat Rosset and the generals. If R. has gone so far as to invite the General Staff to test his system, any protest against the legitimacy of his title will be fatal to him, and the breach will have come with all its consequences—because we had made a concession to him which cannot be carried out.—Tell Ellena, and others with whom you are well acquainted, confidentially in advance everything that we are agreed on,—as your view, adding that it is mine too, and that of the technical experts. . . .

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[1] Herr Budde, like Neu and Haedenkamp, belonged to the inner circle of workers on Krupp's projects.

[2] The Italian General Rosset had proposed for the trials in Vinadio certain important changes in Krupp's armoured position, which interfered with its purpose.

Florence, 28.5.1881.

KRUPP *to the* FIRM.

So the fiasco has come ; and now the artillery will forgo all the advantages which we offered, and offered in greater measure than was originally asked for ; they will not examine these advantages, and will prefer to remain in ignorance of them ; they intend to revert to the old defective system of earth batteries, ignoring their poor efficiency and their incessant sacrifice of men on repair work ;—all this points to an influence—also to chivalry and contempt of death—which anyone is free to display on his own account as much as he likes.

Every change made by Rosset proved a failure. . . .

P.S.—Night, rain, mist, gunpowder smoke prevent the gun behind an earthwork from operating ; none of these can prevent the armoured gun from going on firing through most of the 24 hours in the day with unfailing accuracy of aim. All respect is due to the men who may have the courage that gets great things done, but cannot make it a substitute for armour.

A picture of the value of the armoured gun in both aspects, of its endurance and its devastation, of expenditure in money and men's lives, could certainly be given easily and very tellingly by our gunnery men and Engineers to other experts. The truth is bound in the end to make its way. In view of the very much safer working of an armoured gun at all times through rapid and safe firing—and of the fact that it can work at any time, when the other cannot see its objective—I believe that for these reasons alone the efficiency is of such value as to be beyond expression in terms of money—for the purpose of the fortification is to prevent the enemy from penetrating into the country. . . . Our aim must be to secure that a similar calibre to that of the armoured gun can never disturb us in working the gun, and that no one need put his nose outside it.

Essen, 24th June, 1881.

KRUPP *to* LONGSDON.[1]

My very dear friend !

I am returned since two days.[2] Dr. Schmidt examined me and found me a great deal better—he says, nearly entirely.—Now I am contended and think, that also the small remainder of weckness will pass by. I got it by want of exercise and continued sitting, writing, study and similar stupid occupation. " A goose " somebody will say.—

Since 15 years I had forgotten walking and have seen since my return here many a spot here, where I have not been since that time. Thus I'll continue as much as possible and go as seldom in my room, which was become my everlasting prison.

I give you this token of existence and send you and Mrs. Longsdon my best wishes.

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[1] Written in English by Krupp.

[2] From Italy.

Undated (probably August 1881).

KRUPP *to the* FIRM.

The bigger the task and the more difficult its solution seems, the bigger the achievement. Now let us assume a weak side of the gun on the hollow island.[1] The immobility, which enables an enemy ship to ram the island or crush it. But before that is done the ship has shots in her hull from which she will not recover. Thus we lose island and gun, but the enemy loses his ship. If we have towed our island into the sea so far that we prevent the enemy from bombarding the coasts, and if we are actually unable to save the battery from superior force, to bring it back into port, it seems to me that we can still buoy the spot, so that later, when peace has been restored, the gun can be lifted again. . . .

Essen, 27.9.1881.

KRUPP *to the* PROKURA.

To be sent to Herr Baedeker.

DECLARATION.

An article in your issue of the 27th contains the statement that the loyal electors have counted on my readiness to be put forward as a candidate for the Reichstag, as I agreed three years ago on a similar occasion.

While I am very grateful for the honour thus proposed to be accorded to me, I find myself compelled to state that the statement in question is in entire contradiction with everything that I have said and written hitherto. I have never been ready to accept any sort of mandate, and as hitherto, shall never be able to come forward personally as a participant in business of this or any other national or public nature, for the simple reason that I have not even the strength required to fulfil my business duties.

The above draft was followed on the next day by the following remarks to the Prokura :

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[1] The so-called floating battery.

After I had seen the newspaper article I wrote as enclosed, and should like it written out fair (with my signature simply copied) and sent to Baedeker, so that it may without fail be inserted in to-day's paper.

For years past I have said quite plainly to private persons and officials, civil servants, lords-lieutenant, Ministers and even the Kaiser, that I have neither the equipment nor the strength and time to occupy myself with any sort of public affair. . . .

Essen, 7.3.1882.

KRUPP *to* RÖHN.

There is a complete list of my orders somewhere, with the time when conferred and so on.—Also whether bestowed *in natura*, whether to be returned after my death—or not. I have had to buy and pay for many, and these of course remain my property. Nor do I know whether the Turkish, Spanish, Belgian and so on are to be returned. But I think the Prussian has to be. Please get hold of this list, complete it and in due course make the needed enquiries.

There is further a list of all medals of value—especially from industrial exhibitions. Please get this list too and ascertain where the medals and other gifts are now. Among them there is a big bronze medal from the first English exhibition, the Council medal ; this is the one of the most value, for this recognition quickly made the Works famous (anno 1851) ; there is also a diamond ring from Grand Duke Michael and a big golden snuff box with brilliants from the Emperor of Austria.—

Should the things not be in the Works, should they all, or some of them, have been preserved as formerly by my wife, —or should they not have been returned to you or my son, you might make enquiries as opportunity offers and try to find out where the things are and how you can get at them. These distinctions for the Firm must all be brought together in a receptacle of solid construction—preserved in transportable condition—with room for future distinctions,—visible, but so protected by glass and wire netting that neither dust nor the hand of a thief can get at them. That should suffice.

Essen, 3.4.1882.

KRUPP *to* LONGSDON.[1]

My dearest friend !

To day I have been in Düsseldorf at Hertels atelier and I saw there your new photographs which he finds perfect. Only you look thinner and for this reason I write these lines to you. You must for some time give up the hard work, which does not agree together with temperance, food and drinking. Formerly you took your wine and even a glass of brandy, and now tea and soda-water. That does not give fat on the rips and round faces. Please follow my advise, go abroad, where best you please, which one friend. who would be a comfort to you by sympathy and intelligence, but nobody whom you must care about.[2] A person and a friend of similar age and taste, and then enjoy air and exercise, go to Switzerland, to Sweden or where you like, but go and leave business behind in secure hands. Please think on this, and then when you have got a face like fullmoon and rosy cheeks like in former time, then come back and work again.

Or if you are 7/8 th of a fullmoon and you can resist the temptation to go to the manufactory, then come here to the hill and live in our good air with much exercise and then we will go every day on horseback together and you shall choose your horse and we will ride to Düsseldorf as I did yester day and study paintings, and go again as often as we like. And thus we will amuse ourselves and talk only from time to time of business and fabric,[3] just as much as is far from harming health. Now, my dear friend. don't loose a day and follow my advise and be happy. My kind compliments to Mrs. Longsdon and my hope, that she will not take amiss my dealing with your bodily welfare and not look on it as on an intrusion o a patent. My best wishes to her.

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[1] Written in English by Krupp.

[2] i.e., take care of.

[3] i.e., Works.

The Hill, 24.11.1882.

KRUPP *to* BUDDE.

CELL SHIP. INTRODUCTION.

We shall soon supply the proof that every armoured ship is destroyed above and *below* water by our projectiles. These devastated, expensive vessels will then be valueless. The next thing is to find a substitute for them. The floating battery has the property which must be incorporated in ships, the cells in its hull, which can be exchanged.

(This is not to be regarded as the same thing as the compartments into which a ship is divided in constructing her.) —Separate compartments will be fitted on board and exchanged. I suggest investigating whether this can be patented in the same way as the floating battery.—The ship may be variously designed according to circumstances, whether for single small guns or several large ones—the principle must remain the same. The ship will not be built more strongly than is necessary to carry the weight—with no external armour. But there may be small spaces in her which are completely shot proof and must be so, for machinery and powder, which must remain dry. Boiler and powder, however, may also be on deck, bearing in mind that a boiler can be shot through and quickly replaced from store.—

The ship must be of such a size that she contains enough cells to keep her above water, even though she might sink the depth of a deck. For long voyages I envisage tugs and small pivot boats for transport and escort. An armoured ship with her hull penetrated by a few shots must inevitably sink ; with this ship, the shots may penetrate, and where the armoured ship fills with the inrushing water each shot will perhaps bring only a few hundred cubic feet of water into this ship, and where with heavy armour all are quickly lost, with us the only men who perish are those who are hit. The big ship can have crews of any size in the dry cabins above water—500 men mean 50 to 60 tons' weight. The ship will be very light and will move under small power, and so will not need much for manœuvring ; and she can take any punishment.

This is the first rough sketch of the idea.

Düsseldorf (?), Dec. 1882.

KRUPP *to the* FIRM.

Send to Herr E. Pieper,[1] at my expense, at Grafenberger Strasse, Düsseldorf, 3,000 marks, for the following purpose.—It is for the support of the people who have become homeless or destitute through the floods and who will be in imminent danger of the sicknesses which are to be feared from the flooding in the damp houses.

I do not want this used to replace losses of property, but only to protect the lives of poor families with bread and with nursing where sickness supervenes, so far as can be done with this sum.—The damage that may have been done to a shop, to furniture and household implements, to fruit stocks or the growing crops, are not considered in this connexion, but simply and purely whether the families deserve support with food and nursing. The man who can earn his bread by labour is excluded, and still more the scamp who will not work and prefers to batten on charity.

The year 1882 brought the last and the saddest of the partings which had marked Krupp's later years. He had lost many friends and colleagues in the previous decade through death or resignation from the firm and in some cases through failure to make good. There remained few of the friends of his ripe manhood around him or accessible to his still active pen. Now, after nearly thirty years of comradeship, his wife ceased to share his daily life. Little influence as she had had in the important questions of his business, he found life hardly thinkable without her. But with the growing roughness and hardness of his nature, there had been a gradual falling apart ; their activities and their inclinations were different. She had been much younger than he, always frail, in need for months at a time of the air of the spas or the sunnier South ; that of The Hill was too cold for her, and the stiff and sometimes queer ceremony with which Alfred Krupp protected

[1] Eduard Pieper, 1841–1913, a brother of the Albert P., member of the Prokura, who died in 1870, and of Dr. Johannes Pieper, Krupp's private secretary, belonged to the circle of Krupp's intimate friends in Krupp's later years, and often performed acts of charity in which Krupp did not wish to appear.

his own need of peace had become uncomfortable for her. The two separated, without a divorce, and only the mutual respect and love which still remained, and the marriage of their son which soon followed their separation, wove a loose bond of understanding between them.—Krupp adjusted himself to the inevitable, but it made him even more unbending and more solitary than the earlier disappointments in his life. The Works, too, he visited less often, he withdrew almost entirely from current business, and his judgment of and participation in what was going on grew less intimate. The things that now filled his days were social welfare among his workers, acts of charity, political affairs, from time to time household matters, and the ordering of the future of his life's creation. He found himself more frequently the victim of frailness and ill-health, and saw old age coming visibly and disturbingly near.

Essen, 17.1.1883.

KRUPP *to* JENCKE.[1]

I think the Kaiser knows me well enough to reject the suggestion, if anyone should make it to him, that we resort to intrigue, to the detriment of the prestige of the country's power, in order to get orders for guns.

Our first concern is to serve the Kaiser and the Reich, and to offer the whole of the firstfruits of progress to the fatherland. Before the war with France I wrote to the Kaiser offering completely to equip the country with the new and improved field-gun, for nothing, suggesting that payment should only be made if the war ended successfully—if it did not, then not at all.

Such guns as we had ready I offered to the War Ministry free of charge for the war of 1870, and I expended large sums for the support of our soldiers. The Kaiser knows that, so there is no danger. But it would be well if one could get to the bottom of this and could get the libellers punished. Probably it only comes from a so-called competitor, some envious person. In the past a certain B., of B., repeatedly put forward his own inventions, to the detriment of the Works, to the War Ministry in Berlin, and it would be by no means impossible for this too to be his doing.

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[1] Statement in reply to a malicious paragraph in the Press concerning alleged intrigues of the firm of Krupp, aimed at securing orders for guns.

I only mean to put this to you as one suggestion. Please take what steps you think useful by way of approaching the Minister of War, the Admiralty, and elsewhere.

The Hill, 10.4.1883.

KRUPP *to* FRITZ FUNKE,[1] ESSEN.

It was not the bit of paper, which is of no value, that I made the remark about to you yesterday, but anything that anyone has given me out of friendship and on account of personal relations I must keep to return to him. Be it of great value or little, I am not entitled to make a present of it to someone else who is unknown to the giver. I said so yesterday primarily to leave no room for doubt in anyone's mind—though of course it is a trifle, not worth writing a line about. —But it is a matter of principle. If you have given the paper away after all, I will send it to you once more, and I am also giving directions for the big picture to be sent to you from the Works, framed and glazed—you have planted millions of stones there.

Now one other matter. You always say straight out whatever occurs to you, and I made a remark to you yesterday in a friendly way with regard to giving information to any who might be curious about my household arrangements. I can only repeat what I then said. If I receive confidential information from anyone or see into his family affairs or household arrangements, I am not free to pass on what I have learnt. If a stranger asks me questions about such matters, I tell him straight out that they are no business of his and that I have no right to satisfy his curiosity.—

Well, we have settled that, and if you are ready to help me again next time I shall be glad. I am in bed with rheumatism, and so have time for letter writing. But please do not reply to this, for the matter is not worth it. I only wanted to say what my principles are.

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[1] Fritz Funke, born in 1821, was brought up in narrow and even poverty-stricken circumstances, and worked his way up by his own energies to the position of one of the foremost industrialists in Essen and its industrial area. He owed much to Krupp, but was also himself a benefactor to many through his activities in the public interest. He had much to do with the building of The Hill as contractor and consultant.

The Hill, 22.4.1883.

ALFRED KRUPP *to* FRIEDRICH
ALFRED KRUPP.

The new method introduced by Hartstick, of Düsseldorf, of photographing in 2 seconds, should be taken up by van Werden. I want him in his free time to photograph all the officials, foremen, and good workmen of the Works, as was begun to be done 12 years ago, and then special albums, of some size, should be filled, with the names of all of them. These albums can be plain.

If van Werden has the time, I want him then to try to make portraits of life size, about ten times bigger than the existing ones.

The head must be gradually enlarged whole, but the figure can be cut up into 50–60 pieces and these stuck together. The degree of sharpness and the shading will have to be kept uniform—that is all.

I want Herr v. W. to think this over, and I think that in this way specially fine, big pictures will be obtainable. The marks for the cuts must just be kept accurate for cutting out and sticking together. He can take any picture he likes to try with. Of course the position of the camera, the time of exposure, and the length of time exposed to the light for printing must be kept to with absolute accuracy ;—it may be, too, that a good many plates will not be successes.

P.S. I should like, for instance, the campaign pictures in the little house enlarged as decoration for bare walls, and also the Kaiser and Crown Prince on horseback, from the best pictures. A little retouching may be needed. At a certain distance all this will not be noticed, and the result may then be very impressive. I should even suggest decorating some tall, smooth wall in the Works in this way, where there is no dust. Perhaps a varnish will be needed.—In a word, all this is an idea for testing.

28th October, 1883.

ALFRED KRUPP *to* LONGSDON.[1]

My dear friend,

I received your valued letter, but I did not yet give you the answer, because it is not only the question you lay before me, but in consequence of the same there are numbers of questions which I shall bring before you.

All these new speculations and all this trade without proportional profit and without future—like the manufactory of rails Bilbao, and partaking of a Share-Company in Sweden, all these things and enterprises which—if not by the number of competitors—will go down as soon as the principal heads—for instance yourself—will cease to give a profit—if not fate only ruins them,—all these things are against my principles.—

I shall propose to you to do away with all the mines and vessels and high furnaces and Bessemer-works and to clear the substance never mind with a certain secure loss—and to dedicate all our power to the making of guns and projectiles and wheels, Siemens-Martin-steel and Fluss-Eisen[2] and productions of the latter.—We must encrease the shops for lathes and we must have the large hammer and we must do away with all vulgar produce in which we have competitors—above all in Share-Companies—who always will ruin the competitors, ruining one shareholder after the other.—I have not yet contemplated the whole and it is not necessary, that you should give yourself great trouble in order to contest my sudden ideas, which may be false in some regard, but I wish to be judged calmly. Suppose you live another twenty years. Will you be pleased to be uneasy about the result of exertions which are doubtful.—

Our railmaking may become one day the cause of grief and sorrow—as it has been already before. Working and cares, without profit with loss—is nonsense. We may sell our property which we acquired for railmaking—because it gives no profit—all mines, vessels and apparatus for making Bessemer-steel and rolling-mills,—say to Russia the latter and build the larger hammer and numbers of lathes and make more pieces by forging and encrease the production of shafts and wheels of anything which gives more profit—but do away with the Bessemer-steel and rails, which will be ruined by the number of competitors. As I told you before, I have not yet made up my conclusion and will have depend it on your opinion.[1] I write to night much more about it than I intended, because I always think, who knows whether I shall live to morrow.—And thus please to look on this. . . . I hope there is nothing pressing and that at your next visit we can determine every question.

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[1] Written in English by Krupp.

[2] Mild steel.

Now my dear friend it is the highest time to go to bed. I hope that, when you receive the present, you will have slept well.

God assist you to understand my writing.

Essen, 27.12.1883.

KRUPP *to* PRIVY COUNCILLOR MOSLER,
BERLIN.

I had heard from my noble patron, your father-in-law, that you are no longer in Berlin ; but I had not heard of your distinguished career. Accordingly I sent the brochure[2] to the former Regierungs-Rath, care of the Minister—not knowing your address,—and instead of at some eastern seaport or frontier town you received it in Berlin.

Forgive my writing in pencil, for fifteen years (and more) I have been unable, on account of nervous trouble, to write otherwise. I write and draw day and night, and only get through so.

I am exceedingly pleased that I have not done wrong in sending the brochure to you. You are concerned only for truth and justice. I sent a copy to the Minister, Herr Maibach, to the Chancellor, to Oberpräsident von Bardeleben, Herren Stumm, Funke-Hagen and Schorlemer, and also to Oberbürgermeister Hache, who, like many blind adherents of the idea in the Upper House, where I had been quoted without justification, had spoken in support of it and even had the hardihood to represent my Procura—which, I need scarcely say, entirely agrees with me—as being in opposition to me, and my authority here as doubtful. This last will scarcely have been credited by anyone.

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[1] i.e., want to be guided by your opinion.

[2] Krupp had written a pamphlet, with the assistance of the Prokura and Longsdon, against the plans which were being put forward for internal waterways ; he sent the pamphlet to many influential people.

I write all this in order just to add that from the outset I have refrained from any sort of participation in the negotiations, and shall take no part in them, simply because my strength is nothing like enough for duties much closer at hand.

Some time ago I communicated to Oberpräsident von Kühlwetter the result of my enquiries in England and America and my own experiences and observations, and warned him accordingly. What I had to say is included in a small compilation which I had filed—before the result of the enquiry which had been conducted in England was known—in case it should be of service here, after my death, to know what I thought about the matter.

Probably no industrialist could have been more closely interested than I in a cheap means of communication with the North Sea and Baltic,—and if the State expends hundreds of millions for the purpose, which subsequently have to be regarded as a loss and made good, few are likely to be more heavily hit by the contribution required from them.—Please put my remarks to any use you please by way of distribution for consideration, but leave me entirely out of any discussions that may be arranged, for I cannot and will not have a discussion with anyone ; I have always kept away from such negotiations when they affected my own interests (as for instance, in the customs question), as it is always assumed that one is mainly looking after one's own interests and not those of the community.

Herren Stumm and Funke have been misrepresented in that very way.

As I owe the compilation of a set of regulations largely to the goodwill and criticism of Your Excellency, I venture to send you a couple of the little books and also some matter concerning our welfare institutions.

Such matters, with the improvement of management and new inventions, occupy my time entirely, and so I may perhaps be excused if I have no ambition to undertake public work.

I have written at considerable length, but with no pretension—I only want to make a statement, to give an explanation in a quarter in which it would not be a matter of indifference to me to find myself misunderstood.—Thus I do not expect any sort of answer. I value the letter which I have received from you, and that is enough for me.

The Hill, 2.3.1884.

KRUPP *to* MAX UHLENHAUT.[1]

Can you give me any news from San Remo? I hear your brother too is suffering from rheumatism; I hope it is not serious; anyhow the climate is better there for getting well again than ours.

I hear from my son that you are now making an excellent tool steel, and am glad of that. That has always been our weak side. The next question is whether the material you want is to be had in big quantities, whether we are independent of other people. We must own the source, the mines and smelting works.

If we could produce a first quality steel of this sort for fine tools, the summit of my aspirations would have been scaled. If we can do it with certainty and without greater expense than our rivals, it might be easy to distribute 100,000 lbs. a day over the globe. . . .

[*Conclusion after some technical passages :*]

Please think over the matter, and see also that your brother is made acquainted with my wishes, and that if my son remains long enough in the Riviera the two discuss the question there.

My son wrote me that he intends to visit our relations in San Remo.

You need not spend time on a long report to me, if you will just let me know briefly, to put me at ease, about the supply of the raw material and our independence in regard to it, however large our requirements.

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[1] Max and Karl Uhlenhaut, who as youths had attended a polytechnic at Krupp's expense, had for a long time been in charge of the melting-house department. Karl had for some years now been frequently away on account of sickness.

ST. DEINIOL'S LIBRARY
HAWARDEN

The Hill, 29.7.1884.

KRUPP *to* E. PIEPER.[1]

I have been laid low since Saturday and still have no prospect of entire recovery at an early date, and I hear from Hartel, who was here, though I did not see him, that you too are unwell. Let us hope for the best!

To begin with, I am sorry Schmidt's wife had the power to annul the agreement. Then I say to myself that if the needed help does not arrive in time anything may happen. I am ready to prevent that. The person may very well come up in the world again and by her way of life compel her relatives to recognize her. First she must be brought out of the danger of going under through destitution, of dying of hunger, or going mad or succumbing to vice. Necessity has no law.

From my youth up I have made it a principle to take up anything with ample resources and energy (never to be satisfied with half-measures), and so I want just to say to you at once, that in all, including what has been paid, I am prepared to spend a thousand marks on the most unfortunate woman. I am afraid that owing to her illness she can scarcely receive news of her coming rescue soon enough, and should have no objection to a telegram being sent that " Request shall be complied with."

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[1] Of the many letters of Krupp's which bear witness to his quiet charitable works, this one has been chosen on account of its fullness as evidence of the good-heartedness with which the overworked man, to whom all writing was then a labour, was able to become absorbed in a stranger's unhappy fate. The circumstances are revealed by the following lines of Krupp's, dated 6.6.1884:

" I have just had this letter from a Norwegian lady who has already been turned away from here. It may be all lies and she may be a bad woman, but it is also possible that she has only been indiscreet on one occasion and has been turned out by her family.

" She talks here of jumping into the Rhine.—

" I venture to send the letter to you as in view of your connexions you will be able to ascertain whether this person is behaving well in her misfortune, and also why she does not get work to support herself.

" Even assuming she is unworthy, it might be that she could be saved, and this would still be worth doing.

" I never admit such people, if only because there is no getting rid of them again. Among your acquaintances you may have someone who knows the house where the person lives and can give information. If by a sacrifice I can prevent her going under, and if she can be put in the way of supporting herself, I shall probably be ready to do so, though without having anything personally to do with the person or any further trouble about her. The guardians of the poor know best, of course, how to go about these things. Probably something will have to be done by tomorrow. I shall send no reply. If one of the Düsseldorf guardians, into whose hands she might, indeed, fall later, would be prepared to make enquiries or arrange for them to be made, I should hereby put at your disposal whatever may be considered useful and desirable. If after that she proves worthless, let her jump into the Rhine, but if she is worthy let the 200 marks be paid on my account, with such precautions as may seem fit for her to pay her debt in instalments and not be destitute again tomorrow . . ."

Now arrange entirely as you think best for assistance up to 1,000 marks. No one looks more closely at a penny than I have been accustomed to do from my childhood, and that is how I have become able to spend money on any useful object without considering the amount. I have found by experience that in spite of every precaution one hardly attains one's object once in five or ten times, but that has not discouraged me. Now caution has become more of a habit.—All questions of assistance now go through the Works, at least of assistance to strangers ; most pass through your brother's hands ; the practice is to make use of the clergy as our agents and informants, and they always show great willingness to assist.

So the idea has occurred to me : while you will have the first payment made direct, suppose you made your brother acquainted with the affair ?—He knows Norwegians and also the way to go about. It seems to me that the Consul has been unwilling to do anything, but perhaps one of our acquaintances might interest a worthy priest in the person, and this priest would assist her, set her on her feet and strengthen her, and also bear witness about her to her relations.—It would be very well if she were to leave without delay for Christiania, to be under the eyes of her relations, and once there on no account allow herself to be persuaded to leave the country, if she has it in her to live an upright life. If she has and is industrious and gets a footing and works with success, she may yet win good repute, and if her relations refuse to recognize her and will not live in the same town with her, she can tell *them* to leave Christiania.

You know I wrote to you " if the person is worth nothing better, then let her jump into the Rhine."

There are matters of millions about which I write less than all this about this person, because I think, with you, that it is possible to save human lives and that they are worth saving.—

I think it will be well for her to know the extreme limit to which the assistance will go and that she will do well to be economical, so as only to go to that limit in case of necessity. It is not to be by way of loan but a gift.—

It would certainly be splendid if in this way she could struggle out of her troubles, and if, say, in years to come, you cared to take a visit to lovely Norway and were to go with your wife into a famous shop in Christiania—your foster child were suddenly to present herself to you as head of the house.—

When you are fit again could you manage to get here with your wife? I would see that pleasant company were here for you. You could fix your stay as long as you like or make any change you will, and if the company is all your wife wants you could get out to D—— village on business for the day, as often as you like. Rocou has gone for good; he was quite mad with homesickness. The Sultan too is welcome.

Kindest regards . . .

The Hill, 17.9.1884.

KRUPP *to* JENCKE.

Herewith the communication[1] and my reply.

—— is merely ambitious and would like to play the patron of the Works and have us his humble servants. The Prince is certainly not coming to Essen nor to The Hill, and if he is to be invited to the Works it must be done by me, the Prokura, or my son.—

This is just my unofficial reply to you and I may add that if you authorize —— and the Prince comes (or does not) I leave everything to all of you, provided that I can remain in peace at The Hill, even if he should want to come here. I should prefer him to come alone without staff, quite privately.

I leave it to the firm to give Herr —— in my place the authority to invite Prince Bismarck to the Works, and for that purpose the Prokura and my son will represent me. I decline at once with thanks the invitation extended to me to go to the gala dinner at Benrath; I should be unable either to meet the Prince at the railway station or to accompany him to the Works, or even receive him there with his escort : for I am simply not well enough to take part in anything beyond everyday matters,—in other words to do anything but vegetate and avoid all excitement.

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[1] The communication related to a confidential suggestion from official quarters that Prince Bismarck, who was to visit Düsseldorf, should be invited to the city of Essen, of which he had been made a freeman some years before.

Brühl, 29.9.1884.

COUNT VON PÜCKLER *to* ALFRED KRUPP.

With your kind consideration you have so spoilt me that in my absence in Brühl I feel quite orphaned, and I shall be glad to hear how you are. After that it is a national and political matter that has led me to write to you.

The desire has been openly expressed in the Essen constituency and also on the part of the Minister that your son should be put forward and elected a member of the Reichstag. You have always yourself declined to be elected, and the constituency is accordingly apprehensive lest you should also be unwilling to see your son elected ; I have thus been asked to approach you in the matter. However much you yourself, perhaps rightly, have been unwilling up to now yourself to be elected, the circumstances are quite different at the present moment, as, if all capable and well-disposed persons stood aloof from candidature, the disguised Republicans and Social Democrats would necessarily carry off the victory. I have found the supposition of the gentlemen of the district, that any relations I may enjoy with you might have some influence on your decision, a very flattering one, and I have lost no time in discharging my commission.—

As you have always shewn me such kind sympathy I will say that I am still staying here in Brühl and that my condition of health at the moment is very doubtful.

Essen, 3.10.1884.

KRUPP *to* COUNT VON PÜCKLER.

Your Excellency,

I am sorry to see from your esteemed letter of the 29th inst. that, contrary to all expectations, you are not yet well and are still in Brühl. I thought you were long ago back at your usual high place at the Imperial Court. I am myself tied to the house by ill-health and have even had to deny myself the sight of their Imperial Majesties on the Rhine—even from afar. Who could have given me news to contradict the newspapers, which represented you as well again and busy in your high office at the festivities in connexion with the grand manœuvres ?

Now I will pass to the reply to the question you have most kindly put to me, concerning my permission for my son to accept nomination for election to the Reichstag, should it be offered. Yesterday I telegraphed that I would reply in writing to-day. A refusal needs justification, while a " yes " would not require it. Unfortunately there is no choice, and so the letter cannot be quite a short one.

For some thirty years past I have repeatedly replied to similar questions put to me by the late Royal Privy Cabinet Councillor Illaire, and have been able to convince him that I cannot split up my energies and spare any beyond the field of the interests of my Works, which have only painfully been built up by labour and renunciation, and that I must live only for one end, dispensing with distinctions and honours and social position.

I have controlled the Works since 1826, beginning with five workmen ; they had not reached a position of security by 1848, and later events have established beyond question that the proprietor of the firm must not depart from the policy which I have described if he does not want to imperil the situation of the establishment and his own.

My only son is and remains in the same position in which I was in the past. Apart from care for his health and necessary holidays, he has the duty of personal attendance in order to devote his whole energies exclusively to the Works, which now employ 10,000 persons in Essen and 10,000 in mines and smelting works in the Rhineland and Westphalia.

Unfortunately his health has hitherto allowed him to devote comparatively little time to his profession, and even had he the strength of a giant it would be impossible for him to study the unfamiliar fields in which an active member of the Reichstag (or of any other office) must be expert if he is to speak and vote worthily and with conviction.

I owe the admirably ordered management of my Works and interests to the present excellent Prokura ; but these gentlemen are not immortal, I myself am old and suffering, my son must be prepared, whatever may come, to carry out his duties here, and throughout his life that will only be possible in the way indicated.

I frankly admit that I have never had the time to make enquiries concerning potential good political servants of the nation and their views ; but beyond a doubt there are among us here, as elsewhere, men of years and experience, patriotic personages of known high character, who would be preferable to one who has not yet attained the same eminence, and, as frankly admitted in this instance, is had in view primarily on account of his position. Such personages will be found among the industrialists, and will be much better capable than any Krupp of representing the great common interests of State and industry.

There are industries which almost run themselves, whereas in ours progress must be strained after day by day : I myself, though I cannot venture to visit the Works, still devote to them the whole of my remaining strength.

Even in questions of *taxation and customs duties* I have never intervened, although they have affected me very closely—all for the one reason, the same one for which, though a passionate gunmaker, I have never been hunting. . . .

One more point. The number of souls in my community—men and their families—amounts to 65,000 ; two-thirds are Catholics. I have never discovered any difference in their loyalty.

Imagine the excitement if a Krupp, in a question affecting the conflict of creeds, were to cast a vote which alienated a section of his men. Rather have no Works at all.—

I have only one strict Works rule—loyalty and domestic morality. And so far as I can secure it that is carried out. In this way the State, too, gains loyal subjects.

It would not be pleasant for me if these confidential statements were to come to public knowledge, and I urgently beg you only to pass them on to the Minister on that understanding.

In his long letter to Count Pückler, the Marshal of the Court, Krupp clearly outlined once more the life task which he had set himself, with the firm will never to budge from it by a hair's breadth. And by this letter he bound his successor. But in the following years, Krupp's last, one may search for a long time for another letter of such force and logic: only, perhaps, his last "Word to my Workers," of February 1887, concerned with the impending general elections.

A change had come by then: he unreservedly embarked on a policy which he had always rejected, and he also gave the permission which he had refused in the past for his son to stand for election.

Noticeable in the great quantity of letters of these last years (only a few can here be given) is the persistence in interests and views in which others could no longer follow him, and also a growing tendency to be sunk in experiences of the distant past, which hampered his judgment of the present. But he held unwaveringly to the great traditions of his past, his insistence on high quality at all costs, his love of his workers, his veneration for the old Kaiser and for Bismarck. His letters, always written in pencil and most of them scrawled while in bed, were an endless trial and pain to him, but they stood for duty. Other work and any sort of excitement he avoided and feared, for he wanted to preserve as long as he could for the service of his community the old and exhausted frame which was no longer more than the instrument of his will.

16.1.1885.

ALFRED KRUPP *to* FRIEDRICH ALFRED KRUPP.

Dear Fritz,

My train of thought has led me on from one thing to another,[1] so I will go on putting down my views for you—for I will never come out and fight for any cause.—Instead, I leave you free to say straight out just what I have written if any personages whom one can trust care to know my views.—Only keep clear of cases where an action for damages might arise out of what I am saying.

I wish you a good time.

Your affectionate

OLD MAN.

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[1] As often, Krupp had been giving vent to his feelings about the "canal fanatics."

I have read a statement of Prince Bismarck's about the grain duty. I was struck with its originality and clarity. Only one objection came into my head ; it was that for 50 years past luxury has increased in all classes and remarkably in the lower class, and I think that, whatever may be done for them, people so spoilt are beyond helping ; the moment they feel any appreciable relief, luxury and German fat living will only increase further. The women in the journeyman's family wear lace-up boots nowadays and every silly youngster puts on Wellingtons. The masses are no longer content unless they have nothing left to save, the women spend everything on outward show, a dairymaid wants to look like a great lady and the men throw away their money in low public houses ; the families want to appear above their proper station, and so in these classes not only has want spread but it is fairly general. We are a long way from the Frenchman, who is sober and thrifty—though Paris offers a different picture.—

Compared with all this, how simply people lived 40–50 years ago ; and they were happy and on the whole fared decidedly better. In those days wooden clogs were worn, and they did not let in the water. I wore them myself at work. A pair cost only 5 silver groschen. I wore them at the damp dripping hammer, on the cold earth, and we warmed them every now and then by shaking inside them glowing ashes from the fire. A man got 7½ s.gr. for twelve hours' work, and the men were loyal and industrious. I counted myself one of them. For good master smiths (at the anvil) I gradually put up the day-pay to 12 s.gr. I think our master smith Strünck began at that rate.

I think no one is more to blame for the corruption of the old simple wants and ways than Lassalle, with his devilish philosophy and his doctrine that men should get used to a style of life which must then be provided for. The wretch has sown evil seed. . . . And this man has actually been publicly praised by Bismarck, I can only think because of his gifts and attractive personality. He, the Prince, is Germany's greatest creditor. We owe him more than any benefactor of German blood since Luther. I recall his services and achievements with emotion, and the openness with which he went his ways, in contrast with other politicians and diplomats—so inspiring an example for every man and woman ; but against the enormous credit which stands in his name in Germany's ledger, I enter as a debit his declaration about that man Lassalle, and also his approval of the useless carting away of the Rehberg[1] and of the prospect offered last year of rendering service by digging canals to please the fanatics and canal swindlers of our region.—I have said elsewhere that if the State found it useful to connect the North Sea with the Baltic by a canal for warships, so that the Sound should never become impassable through bad weather or enemy activities from the coast, I should consider that intelligible. If that were recognized as of value in the event of war—even if not also for commercial traffic (though that might be a further consideration),—then I should subscribe a million marks for such a canal. I am unable to judge of its utility. The determination of that is a matter for the high authorities.[2]

To come back to Lassalle, I am acquainted with only a few of his writings.

It is possible to recognize and admire great gifts, but their owner is entitled to no honour unless he devoted his ability to the good of mankind, instead of sinking like Lassalle into vice and playing with human welfare under the guise of a benefactor.

The men who resort to the craftiest tricks, the criminal type, are often full of talent and even genius. But this increases their offence, since they are aware of it while the brutal criminal is not.

I wish someone with great gifts would lead a counter-movement for the good of the people, and prove by argument and evidence that only one thing can be at all times helpful—good conduct, moderation in pleasures and in clothing, and thrift. Then we should need no asylums for vagabonds ; then the penal establishments would have fewer boarders. Another thing would also be needed for the same purpose—more severity and heavier punishment, and less gentle treatment of offenders. People commit a theft in order to get into prison, because the common man is better taken care of there than in his own home. The prisoner has the advantage that he has no cares. His table is laid for him. The father of a family, miner or peasant or journeyman, often lives more poorly (though in more freedom—that is his advantage). The gaol-bird makes light of his loss of freedom. If he is at work out of doors and it rains, work is stopped lest he should catch cold. The peasant, the journeyman, the decent free workman carry on through the rain, not to lose pay.

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[1] A water supply scheme carried out in the Harz region.—Translator.

[2] The Kiel Canal project was adopted by the Reichstag in 1885.—Translator.

I have served up here a mixture of thoughts, as they have just occurred to me, and one can never be sure of the future. . . . Every day I take up my burden, and I do not like to go to bed any day without having done what it seemed useful or a duty to do. To finish, I only hope that the great Prince will succeed in putting through what he has already included in his programme, and that he may live to see that and the joy of success ; that as in the past he may overthrow his malicious opponents and may succeed in exorcising the spirit of Socialism and Communism by his wise provisions.

And may the harm done up to now to the community by the extension of the franchise to persons without property also be effaced. That has been of great service to Socialism.—

If I should be wrong, may I live to discover it.

The Hill, 31.1.1885.

KRUPP *to* BUDDE.

Talk over the following question with experts, if there are any familiar with it among our people ; also when my son comes back. Perhaps Herr Lorsbach knows about it.

The iron obtained from the Thomas process is said to be extraordinarily soft, and it is said that a great deal of wire is now being made from it. Bochum and others are said to be doing very good business in the supply of such iron to wire drawing works. It must thus be substantially cheaper. But the question is how it compares in ductility and strength with the best wrought iron. This wants finding out through information got in some way from such works (very cautiously). If the product shows superiority, the experiments should then be carried out with larger sizes, up to the largest, ingots being perhaps procured and all the processes carried through from forging onwards.—Cautious enquiries should also be made whether the mild steel for compound plates is made from it.

The last point would be of great importance in determining the advantage of using the material.[1]

The first tests of quality will be made with the experimental apparatus, and then with hammers, bending, shooting.—

The softer the iron, the greater the thickness that will be needed. If, however, it is really soft but not brittle, and if 25 % extra thickness were needed as compared with our best mild steel, to offer the same resistance to a shot at right-angles, that would not matter at all in questions of armour.—If the product is soft, and gives without breaking to a greater degree than our best manufacture, it will be preferable and will be exactly what we want.

I have always said, and repeat it here, that it would be best to be able to produce an iron as soft as bronze. Such plates would merely be gradually whittled away by the projectiles. Breaking is the only dangerous thing. Needless to say, no one must have the slightest idea that we are carrying out experiments of this nature, and the greatest care must therefore be exercised in the choice of procedure. It will soon be discovered where the softest iron of this kind is manufactured, and also whether it is already being used for armour plate. Mr. Longsdon will also be interested in the question. The answer to it will determine whether we shall ourselves introduce the process, and this would be essential if that product satisfied the conditions. The perfection of substantial armour plates, which may once more be the source of colossal activity, is what every State is waiting for.—I urge the utmost haste and caution.—Should the product be merely soft and at the same time brittle, it would be of no value. But the solution of the question is of the utmost importance, so that no one shall get ahead of us.

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[1] The letter shows how much the ageing Krupp looked upon the great revolution made by the Thomas process solely from the point of view of the armoured gun, which absorbed him almost with the strength of a fixed idea.

13.4.1885.

KRUPP[1] *to* LONGSDON.

My dear Friend !

At all events it would be a sad thing if between England and Russia a war was to realise the actual fear.[2] The consequences would be too enormous, because there would be war around the whole globe on sea and on the coasts, wherever vessels of the two nations may meet.—One idea strikes me, that none of the civilised countries had at any time a battle on sea since the introduction of the new guns. England's vessels were in the battle near Cronstadt 35 years ago, but they had no fight. They sent only some shells into places near the coast, where was no defense. All the war of France and England was only with savage nations. A war, if it explodes between England and Russia would be a lesson to all nations respecting the value of arms and that would be—on the side of much more important losses—the only benefit of a war, which I still hope will be suppressed.—

Respecting supply to England I shall write you next. I am so deeply convinced of the disadvantage of the consequences, which would nullify any advantage of a supply—as I have been before. Any order would only been given for the purpose of treating a concurrence[3] in England, which would tenfold absorb the actual profit. We can't prevent England from imitating at last our making, but we must not support this sceam[4]—that would be suicide.

I think that the channel[5]-question will also be quiete[6] this year in your House of Commons. That is a very pity, for here in our country all the people are blind and long for channels and I fear, that the concluding report[7] will only appear, when the execution of the channels will be determined by the government.[8]

Respecting the hammer question or a press by hydraulic power I have reflected about many a night.

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[1] Written in English by Krupp.
[2] i.e., present apprehensions.
[3] Creating competition.
[4] Scheme.
[5] Canal.
[6] Left untouched.
[7] (British) report and conclusions.
[8] Has already been determined on by the (German) Government.

I can't form an idea of the english system of such a press, but if I consider the enormity of pressure required, I think that the frame must be of most enormous strength and therefore become very dear. We must work our large ingots in a third of time and finish them in more complete density till to the centre. Our hammer is not at all fit for such large piece and we must have either the one or the other. Is there not a patent in England to see from it the essential construction. I can't think that there is anything which we could not make and I should not like to order the large press abroad. I should not mind to order a smaller one in England, if you are convinced, that this tool workes more profitably than the hammer. (The blows in the crane and in the chaines will be done away with and the shaking of the ground. This is already most preferable.) But when we go over to such an outlay, we must be utmostly secure of the result and of the solidity of the machine and all what belongs to it. I think that the whole with the necessary steampower will not cost much less than the hammer of the proprosed proportions. I wish that you could[1] give me a nearer idea of the real and essential construction. For the moment I am under the great doubt respecting the italian guns. I have heard nothing to encrease my confidence. . . .

I came yesterday back from Düsseldorf, where I had not been since we were there together. I returned with a lumbago (Hexenschuss). Now they plaster me and if that doesn't do, then Dr. Dicken will electrify me. Poor Dr. Dicken lost a brother in law, brother of his wife, 24 years old, healthy and strong. He was thrown down from a horse, when riding it.—Don't give you the trouble of answering all what I referred to as largely as I mentioned the questions. You know that I have better the time particulary when posted in bed.—

Fritz returned to day ill[2] from Meppen, his wife is still suffering and besides his father and mother in law, visitors here, are both also ill. It is here a perfect hospital on the hill. But I hope that no case is serious.

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[1] i.e., I should like you to.

[2] Note in margin : " Not ill."

Essen, 4th May, 1885.

ALFRED KRUPP *to* LONGSDON.[1]

I have a great deal to answer to your long and interesting last letter, but to-day I write you only a few lines.—

I was always very poorly—not in health of organs, but with your dear lumbago, which with myself is worse than ever. I can scarcely get up from the chair and I am now the very old man. I had the last 3 days 36 cupping-glasses on my back (you know the spot where it aches yourself the same) but dry without using the lancet without bleeding. I tread[2] to go by carriage, but after 2 hours driving I could scarcely get up the staircase. Still I am very peaceful in mind. I have much to do—particularly also with Budde, to whom I write every night.—I have a Doctor here from Berlin (Schweninger) to cure me and I am confident. I have not the courage to write you about our dear, dear friend Dicken,[3] whom we lost so suddenly and unexpected. I come scarcely over this blow of fate. Next I write you more. . . .

The Hill, 11.6.1885.

KRUPP *to* BUDDE.

It is enlightening that our turret is proving dearer than those of de Bange and Gruson ; but that is of no importance if it defies the calibre for which it is designed. If the first one costs double as much owing to expenditure on solidity, and it is stated that it need not be so strong, we have won.

The comment on my first tyres of finest crucible steel was that they were too good—and that comment started them on their career.—

I should like to see comparisons made here with the de Bange and Gruson systems. Let us fire on both at 1–2000 metres, in fine weather, and by the 10th shot we shall have shot off the muzzle of every gun. Our mounting needs only to be in very good condition and to stand firm, and after a few shots we shall have our range fixed and shall keep to it, even in the dark. Our turret must also stand firm. I have no doubt of success.

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[1] Written in English by Krupp.

[2] Am afraid.

[3] Dr. Dicken had for some years been Alfred Krupp's medical attendant, and a very great friend.

If the maximum effect on the turret is calculated you will be able to determine all dimensions and be able to provide plenty of margin, especially where repairs would be impossible. . . .

We must say nothing to anyone about our slide, lest the others should copy it. You can say boldly to everyone that I am prepared to enter into combat against any system whatever—de Bange, Gruson—one down and another up—and want nothing for the turret unless I destroy at least two, and that I will go myself into my turret. By then I shall be well again.

It is no more than just that one should stand security with one's own life before one expects other people to go into the turret.

Essen, 7th January, 1886.

KRUPP *to* LONGSDON [1]

My dearest friend !

Fritz writes me that you are in bed in consequence of a suffering known to him by personal practice.

Perhaps to-morrow comes the Professor[2] and we shall tell him what is the matter with you. I hope you will not use any cure without his knowing, perhaps belongs this event to the course of your cure. Besides it is a very noble infirmity. Our Emperor has the same and has besides 87 years and nobody minds it.[3] I wish the Professor would advise you to come to Berlin and to stay there till you are cured or that he knows your weak part sufficiently for future prescriptions. You see what he made of Fritz ; you are much more strong in organisation and organs. Suppose you go to Berlin, there you will have visits from here from whom you like, besides Hoecker, Budde, Fritz. I am also very weak but I continue in discipline and follow the prescriptions ; you must not mind[4] business.

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[1] Written in English by Krupp.

[2] Schweninger.

[3] Is attending to it.

[4] Trouble about.

If you are well enough you may occupy yourself also in Berlin by treating questions of high importance with the one and the other. Don't mind you getting lighter for I don't either. I am presently nearly only a skin with some bones, the rest is gas. It may happen that one fine day, the gas overwhelms by its lightness and quantity the weight of the poor bones and suddenly, if they don't hold me, I shall go up directly into heaven with my earthly dress, probably the first host[1] of thus appearance in yonder quarter, since creation. What a saving of a dirty roundabout way through the damp tomb and the hot purgatory and what a comfort to one[2] who believes in the latter.

My dear friend, forgive all this nonsense and keep up your spirits as I do. Tell to Mrs. Longsdon a thousand kind things, best as she likes them, but no stupid ones, which I know she hates.

The Hill, 7.2.1886.

KRUPP *to* BARON VON SCHELL-SCHELLENBERG.

Dear Baron,

In the middle of the night—you know I am a night bird—I began to think of our conversation of to-day.

Sir James Allport, one of the foremost among the civil engineers, did not write his opinion about the inevitable decay of the canals for me, but you will find that the last expression of opinion in the translated extract was spoken in the House of Commons, and so in England's interest and not in that of her rivals.

Our railway department does not seem to understand economics—*entre nous*—since it is ruining itself and its capital by excessive prices northwards, where railways and working are cheap. It is letting business go and is already helping competition via the Sound to Stettin, as though it were in the ban of enchantment by some higher power. My Works have saved a big sum through shipping via the Sound, business on which the railways might have made a substantial profit. About 20–30,000 marks were involved.

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[1] Guest.

[2] Anyone.

I think those who have the interests of the State at heart should keep a strict eye on a certain person, but I do not care to say so or put forward any suggestion, as I do not want to have any unpleasantness.

Why is not the tariff lowered? It would be a way of satisfying the coal dealers at no more cost than the loss of a little profit, and if the transport remains in the hands of the Government a time will come when the profit made will be more than at present, since the traffic will increase. . . .

Düsseldorf, 16.2.1886.

Krupp *to* Jencke.

I cannot tell you how relieved I have felt since your visit.—It seems to me that if we agree in what we propose to do we can then—and, indeed, only then—have satisfactory results, now and at all times. That is the rule and it has always justified itself; I prefer to approve what the Procura proposes. (It is always possible that opinions may differ, and as no one among us has any personal interest in view one may hope that no one will ever take another's divergent view ill.) . . .

I hope I shall soon have a satisfactory intimation from the Gun Department that the question of the obturating ring is being thoroughly gone into with the experts concerned. That would remove all further doubts for the future, even without the issue of an *ordre de mufti*, provided that this Department entirely follows out my wishes without the need for any threat to spur it on. I will allow no further opposition either to old arrangements or to fresh changes which have been found satisfactory. Rest satisfied, however, that I shall be ready to listen to any sensible proposal, not only from the Procura but from technicians and intelligent men of any rank or none. It is just because, while I could not endure a university man, I . . . every hard working man, however low his rank, that I made my first advance from a wretched insignificance to a precarious but respected independence in my industry. Nowadays other people like to go to a pretty opera; I am giving myself another sort of satisfaction in writing you these lines—but must close, as my head is humming.

I should like this to be shewn to my son, and all our colleagues might well be made acquainted with it and consider it. I prefer decisions to go out in the name of the Procura rather than in mine, for the Procura will live on. . . .

I shall get my spirits back when we have our solid obturating ring, and even if all of us who are at present thinking about it die without succeeding in it, it will be worked out in the course of time, and in twenty and still more in a hundred years inventions will go on being made, inventions of which not the wisest or the most experienced among us yet dreams. Nor will it ever be a single great genius who discovers the means to the end, never one man alone who imagines that he knows everything best ; those who are devoted to the service of our purpose and not to their own, even men of middling capacity, working together, will always achieve the biggest results, and will achieve them peacefully and with good fruit through working in harmony.

Essen, 30th July, 1886.

KRUPP *to* LONGSDON.[1]

Dearest friend !

Herewith I send you copy of the prescription which Prof. Schweninger gave me.

I took $\frac{3}{4}$ of the quantity of one bottle although I might have taken the whole of it. I took after two or three hours of regular sleep, when generally (at two or three in the morning) I remained waking and became much weakened by nevousity, but $\frac{1}{4}$ of an hour later when I took it, I slept for 3 to 4 hours and was afterwards uncommonly fresh. Thus also the second day, but then I felt sleep the whole day and I didn't take the medicine for two other nights when I slept also well. But the third night the old condition renewed and the 4. and 5. night. I tooke the stuff again with the same effect. To night and to morrow I shalln't take it, but when I, after two days, shall take it again, I shall consumate the content of the whole bottle. By time it looses its effect and

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[1] Written in English by Krupp.

Schweninger advised me not to take it without similar interruption.

I wish the very best success. Yesterday I went on horseback to Düsseldorf, mostly trotting and to day I came by the same means back, but, you know, 1/3 of the way I go in carriage.

It may be a matter of reflection if you like to ask a Doctor of London, only I tell you that Schw. told me, that there is nothing in it, which could do any harm. It took me my nervous asthma away and the stomach is much pleased by that liquid. . . .

The Hill, 17.2.1887.

KRUPP *to* BUDDE *and* FRIEDRICH ALFRED KRUPP.

I am condemned to *far niente*, perhaps for a long time, and I want to obey the order, avoiding going into details and counting on being set at ease as to expected progress by short communications from time to time. To the many tasks which you have taken over has to be added that of coming to an agreement with Uhlenhaut and others about hurrying up the plates for the firing test. My son's approval is to be obtained for everything. . . .

February 1887.

Address to the Personnel of my Crucible-Steel Works and the Mines and Smelting Works belonging to my Firm of Friedrich Krupp.

Sixty years ago I was the managing workman in the tiny crucible-steel works of that time ; there were eight of us in all, and today the Works with their mines and smelting works count some 20,000 employes.

We have from the first been loyal to one another, and care for welfare, justice and strict impartiality towards all creeds have been repaid by zealous work and devotion. The great management of the present day has followed the same principles hitherto and will follow them in the future. That is the explanation of the prosperity of the whole Works and the families belonging to them, and also of the peace of mind of the widows and children of the dead for whom they provide.

In the knowledge that I have honourably earned the trust of all, I am now obeying the impulse once more to address a few words to the great circle of our present-day personnel, as I have often done in past years on other occasions, and with good results. The questions then dealt with concerned the security and peace, the purely internal interests of the Works and of family life ; today I want to touch on the great interests of the whole German Empire, which are, of course, also our own interests.

Briefly, passing over events which are familiar, I want here to consider the General Election of members of the Reichstag which His Majesty has ordered, and to make some remarks in connexion therewith.

The question of peace or war will depend on the spirit of the majority in the next Reichstag. If we come there united and strong, France will not venture to attack us. If we shew ourselves disunited and weak, war is inevitable, and it would then not be beyond possibility that in spite of the incomparable heroism of its past history the German army might be of inadequate military strength and might be compelled to yield before superior force, and the territory of the Reich might be trampled down by war, exhausted, devastated, and perhaps its unity once more torn to pieces.

Every citizen of the State who has eyes to see, whatever his position in life, can have but the one desire, to prevent that happening ; all should therefore unite in obeying the call of His Majesty the Kaiser by electing judicious, patriotic members to the Reichstag, so that the military estimates, which alone can assure peace, may become law.

Only then will the Reich be protected.

All other factories, mines and foundries, and the most various branches of industry, trade and communications, all in the whole country, have the same interest as ourselves.

With peace we have been progressing towards a time of prosperity, and I was filled with great hope for the future. But what is the use of all our contracts if work and transport are stopped by war ! Our Works might even be destroyed ; in any case it would be necessary to be prepared for discharges, even for the complete stoppage of work. And then, in place of earning, there would come distress, the pawnshop, and the moneylender, for my own means and the welfare funds would soon be exhausted. I hope I may never live to see that tragedy.

For everybody's sake I can only hope that no one will allow himself to be misled into having any share in such disaster through voting against the Government. If, however, everyone does his duty, I shall gladly strain every nerve to increase the activity in all the Works, to lay down new plant, and to provide the means of living for more men.

May the whole nation be filled with the desire that all, in deep gratitude towards His Majesty the Kaiser for his devotion of his whole life to the good of the country, shall listen to his voice and follow his noble example of fulfilment of duty and love of the country.

It is my duty to the State and to my employees to give conscientious advice and to warn them against error and its possible consequences. Were I to omit to make these declarations I should be liable to be charged with permitting activities inimical to the State to be carried on within our community ; there must be no room for uncertainty as to that.

It is well known that I have never ventured to occupy myself with matters of municipal, state or imperial administration, legislation, and the like, as my Works demanded the whole of my limited energies ; today, however, I must not refuse my co-operation in the solution of a matter of vital importance to the German Empire ; in the same way my son, Friedrich Alfred Krupp, has accepted the candidature offered to him for the Essen constituency purely in order, if elected, to give his support to the Government's military estimates.

Finally, I hereby recommend all the voters employed in my distant mines and smelting works in Westphalia, Rhineland, and Nassau to take this advice to heart and to work in the same spirit.

The Hill, 1.3.1887.

KRUPP *to* BUDDE.

. . . I am forbidden to work, but reports of success can do me nothing but good. . . .

The Hill, 13.3.1887.

ALFRED KRUPP *to* BUDDE *and*
FRIEDRICH ALFRED KRUPP.

. . . What I wanted to do was once more to give encouragement to everybody.—I am entirely satisfied with everything —mistakes will happen ; everyone will do his best ; now I will not intervene for a considerable time and will leave things to you. I am entirely satisfied also with the obturating ring and the work on the lining of the powder chamber, as a first step.

The Hill, 22.3.1887.

ALFRED KRUPP *to* FRIEDRICH
ALFRED KRUPP.

Present my dutiful respects to the King of Roumania. I shall be very glad if the audience granted gives proof of goodwill towards you. That is of quite exceptional importance now in determining our attitude towards the Ministry and for future dealings. Perhaps there may be occasion subsequently for a journey to Bucarest. At the moment there will be no word of business. It will be very useful, however, if you prepare yourself for it,—not because of the guns, for they will certainly take those from us, and the King will be confirmed in his views in Berlin ; but the sooner you have an opportunity of talking to him about the successes of our armour plate and of furnishing evidence of them, the sooner the opportunity should be grasped, in order to get the people over there away from their ideas about Chamond and Gruson, both of whom are unable to supply anything but rubbish that will not last, and would tap the State to the extent of more than a few millions for nothing but pure loss.

Once there is an irreparable breach in the armour, the position it defends is lost. If the armour is not perfectly sound and is *not reparable*, then it is better to give the preference to the best known of other types of protection, in which a gun can be replaced in a moment. If we only gain time, I hope we shall be the *first* to exhibit a *uniformly solid* system, for as yet there is nothing of this sort in existence. In case you should have no opportunity of coming to The Hill before you go, I wish you now a pleasant journey.

Essen, 31st March, 1887.

KRUPP *to* LONGSDON.[1]

My dearest friend !

Many thanks for your letter and a thousand compliments to Mrs. Longsdon.

I go on horseback, but only walking no trotting and my back revolts from pain. Still I go on, because my torturer wants me to do so and he says, that he will cure me for the next 20 years. I don't believe it, but what can I do better than follow his order.

I accept Mr. Fontanas offer of the statue of the little drunkard (without piedestal because there is one ready for it) of the best Carrara marble at the price of 750 francs and shell be happy to receive it soon in good condition. (The first has been broken on the transport.) It will give me pleasure to give farther orders. Your trial of Maxims invention appears to me important, even if something might be left to desire. What I know is astonishing and I envy the inventor.

Undated.

KRUPP *to* JENCKE (?).

I am in bed with catarrh, and as I cannot write myself I am sending you Longsdon's letter with the cutting. It would be ghastly if the English had actually taken out a patent already in Germany and so become able to rob us of the fruits of prolonged work. We have, of course, proofs, and can satisfy a committee any day by exhibiting them for examination, that we were the first to produce plates of this sort with hardening, and in any case we shall be in a position to produce with greater perfection in material and manufacture. . . . In regard to the patent we must protect ourselves in any way we can.

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[1] Written in English by Krupp.

I had to do the same with the tyre patent against Bochum, and won. If I had *not* done so, the Works would never have prospered. It was only through the manufacture of tyres under the protection of our patents that the Works were able to make enough profit to be able to lay down gun-making plant.

The Hill, 19.4.1887.

KRUPP *to* KLÜPFEL.[1]

I have read with great satisfaction an article on the Altendorf common school. The rooms are no longer big enough ! Children have unfortunately had to be turned away ! That must not happen.—

I regard this common school as the best of all means of producing harmony and friendship between the creeds from youth upwards ; that spirit reigned in my youth even without such schools. At one time the Government favoured this good institution, but later it was left in the lurch through heartless fanaticism among the clergy on both sides. I approve of every unavoidable sacrifice for the spread of the common schools, and wish all the existing schools could be brought over to this system. That is worth spending a great deal of money on every year, for it sows peace and friendship. Now is the moment, the two creeds are drawing closer together, and we must make use of it ; and if the Government recognizes in our action a spirit of unselfish sacrifice for this high aim it will give us its support.

We have sites in the direction of Frohnhausen and Holsterhausen, and if we can get a few hundred acres at reasonable prices, please acquire them. I am ready for any serviceable expenditure with a view to setting up common schools. In our expenditure on education one thing has been overlooked. Every child must pay *something*. No one must have anything entirely for nothing. There are well-known reasons why this should be so. This must be changed, even if on the other side some sort of expenditure for educational apparatus, library and the like, were to be incurred. The difficulties raised by the teachers generally must not deter us, we are not doing anything for them but for the children, and the children can win over the teachers later on and get them out of their obstinate antagonism. If we come to further school building, I hold to what I have said on former occasions. Only ground floor schools, without steps, are wanted in the country. It is with misgiving that I see any school with more than one storey, and with the teacher's residence above. That may be a necessity in the towns on account of the high cost of sites, but where there is plenty of room and the children of wise parents wear clogs, the application of the Government system is not justified. . . .

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[1] A member of the Prokura from 1876 onwards.

The Hill, 25.4.1887.

KRUPP *to* BUDDE.

I am too ill to be able to study the drawing at present. Go ahead with models and experiments as agreed, and arrange everything with my son. I am looking forward eagerly to the result of the experiments at Meppen. . . .

The Hill, 6 / 10.5.1887.

KRUPP *to the* PROKURA.

Remarks about the road to the Works, direct, via the bridge at the Schwanenkamp and via Schederhof and Cronenberg.

The superscription is already three weeks old. Illness stopped my writing, and today I can do no more than give a short summary of what I meant to say, leaving further explanation till later on.

I have only come today, 10th May, to my report, and unfortunately it is all too short, merely suggestions rather than with any completeness in it.

Never were the national roads so bad as they are now.

The carriage road to the town is paved, but it is impossible to imagine the footpath in a worse condition. Coarse clinkers, shale, and rubbish are used, *alternately*. People cut the uppers of their shoes open against the coarse clinkers, and the shale crumbles. The narrow path at Haiden is still further narrowed by buildings. The repairs to Friedrichsstrasse and Schederhof could not conceivably be more roughly done. Repairs should always be done first to one half and then the other, so as not to stop traffic. One side should be rolled and completely finished before the other is begun. Instead of that basalt was thrown down, much too coarse, right across the road, and the poor horses are left to ruin their hoofs on it. This coarse basalt does not get trodden into the stone layer beneath it. Much of it is powdered into dust, instead of which other material from the road itself, or sand and fine cinders should be used to fill up the spaces.

I think we might well come to some arrangement with the authorities about more efficient repairs to the public roads, even if we make a sacrifice, for instance by providing the roller. . . .

No one else should ever own property in our settlements, and as a matter of principle no others than workmen of the Works (and foremen) should live there. It would be desirable that decent people should stay there all their lives ; I hope doubtful people will not be admitted to the settlements but sent to look elsewhere for tenancies. If we discover a disloyal man the question of notice must not prevent us from sending him out of the settlement at once, or out of any of our tenement blocks. I was brought to this subject by a thing I have noticed. I have several times seen small lattice bowers and also wooden sheds up against the houses in Cronenberg, and find most of them very ugly. This might lead even to men putting up goatsheds. No goats or live stock of any sort must be allowed on any estate.

The plans of Cronenberg included an enormous number of goat sheds, which I struck out, if only because all the goats' fodder would have had to be stolen. Goats eat away all the hedges, they have actually gnawed Greece bare. I have no objection to small *simple* houses being built at some future date lower down and beyond the estate, where the women may do gardening and keep goats, but without any sort of extravagance, without balconies or loggias, which, for instance, I disliked on the Dreilinden estate. All these are bad on account of wind and weather, which penetrate into the house, make it uncomfortable, cause damage, and so are an objectionable luxury from the start.

The Hill, 17.5.1887.

KRUPP *to* GUSSMANN.[1]

One thing has occurred to me among others while I have been lying in bed here. I should like to build workmen's dwellings of the same outward appearance as the old house in which I lived for 25 years and after a break for five years more ; they could be let and, if circumstances permitted, later become the property of loyal families. The details could be discussed later.

Will you let Herr Kraemer know about this and give him the two sheets herewith, which will probably be all he wants. I have made the sketches in bed, in the dusk.

The old house is a touching memory for me and a very happy one, and our readiness to show our past narrow circumstances must conciliate the evilly disposed and please well-wishers, and I think a workman will gladly live in a house of this sort and that a good many will want to own it. So be it. All we have to do for the present is to try to acquire sites towards the south-west or north-west, quite close in, and also see about water, apart from what we have already. A tenth to a twelfth of an acre is enough for a house with a small garden. If a goat is kept perhaps more is needed. Farming and dairying should not be carried on ; the husband would have to work with his wife in the garden if she did not succeed in managing it alone, and then he would work at home and rest in the Works. All that must be thought of. These small houses must have quite a different character from the settlements. Not one square foot of those must ever be alienated. The small detached houses must on no account be made into a settlement. If six to nine are built on an acre that is close enough for them to be together. Other types of house can, of course, be introduced in their midst, to avoid unpleasant monotony. But I must say I like best and have most faith in the modest form of our ancestral castle. I can see with my mind's eye a hundred houses of this sort being put up and found insufficient.

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[1] A member of the Prokura from 1877 onwards.

I hope to hear your view at your convenience. I must close now. I have been doing this against instructions; but I am so taken up with the idea that I should not grudge a few days of suffering for it. . . .

Timber framed. The floors of, say, oak. Everything very solid, to keep away the moisture from the soil. Roofing tiles like those in the old Works wear splendidly.

The old house stood valued at 750 thalers.[1]

It would be worth while to build something solid at 1,000 to 1,200 thalers, apart from the site, and perhaps one-sixth of an acre will suffice for a house and goat. I do not want cows. Only small kitchen-gardens, for house and goat.—

I have told my son of this scheme already.

The Hill, 10.6.1887.

KRUPP *to* HERR KRAEMER, *Architect.*

Dictated, quite briefly. Because of inability to write. Tell the Sheriff that I send him very many thanks for the interest which he is taking in the welfare of the workers, and that I watch over it as well as I am able to. As early, however, as 1873 there came a warning crisis in our financial circumstances[2]; I should be so glad to meet the requirements of the Government and its desires to the limits of the possible; if, however, it becomes too expensive, there will be no purchases on the part of workers. The house must be thoroughly substantially built but must cost less; if perhaps you could get out a design, costing not more than about 5,000 marks, which would be approved by the authorities, this would be a great service for Altendorf and would benefit the adjoining districts on either side. We should then be able to begin with more confidence with a certain number of houses and so we could continue as seems best for letting or sale. This question is of such importance in my view that even now at midnight I can do nothing but go ahead until I have dealt with it ; it will be a joy to me if I am able to arrange about the building of these dwellings while I am still alive. The houses must not be set up along a main road but in the fields, and the workman who goes about all day long with 1,200 men around him must be able to enjoy himself with his family in his house ; he will not want to be disturbed by neighbours. Houses only five metres apart will please nobody, for the neighbours may be agreeable persons but on the other hand they may not. I count on the houses being at least 25 to 30 metres apart. To shelter them from without and from their neighbours I should like to supply trees from a big reserve. It seems to me that slate will be all that is wanted for the ground floor ; it will be good enough to use for the roofs the blue Ratingen slates which have worn so well here in the old Works. I have no objection, too, to your covering the ground floor walls on south and west with shingles, for protection in the former case against rain, snow, and sun, and in the latter case against cold. In the roof I only want the two doors to be exactly opposite one another in the middle of the house. The reason is immaterial and it will probably be agreed to if we explain.

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[1] £112 10*s*.

[2] The disastrous balance sheet for 1874 was largely due to carrying too far the building of expensive settlements for workers at Cronenberg.

Alfred Krupp died on 14th July 1887. He wrote nothing of material interest after the letters just given. After sixty years of work at his profession the pencil which he had untiringly wielded dropped from his hand.

THE END

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